Areas Covered

Before Reading This Manual

This section explains the notes for your safety and conventions used in this manual.

Chapter 1   Overview

This chapter explains component names and basic operations of this server, as well as an overview of the software provided with this server. In addition, the workflow, from placing the server to starting the operation, is also described.

Chapter 2   Checking before OS Installation

This chapter explains the preparation on the server and cautions necessary before OS installation. Please read this chapter before starting installation.

Chapter 3   OS Installation Using ServerStart

This chapter explains how to install the OS in the server using ServerStart.

Chapter 4   Manual OS Installation

This chapter explains how to install the OS without using ServerStart.

Chapter 5   Operations after OS Installation

This chapter explains the operations to perform after OS installation. Be sure to perform those operations before operating the server.

Chapter 6   High Reliability Tool

For stable PRIMERGY server operations, we recommend that high reliability tools be installed. This chapter explains the installation and necessary settings of high reliability tools.

Chapter 7   Installing Hardware Options

This chapter explains how to install and remove the various hardware options.

Chapter 8   Configuring Hardware and Utilities

This chapter explains how to make the environment settings necessary to operate the server and how to use each utility.

Chapter 9   Operation and Maintenance

This chapter explains the operations necessary after starting to use this server as well as daily care and maintenance.

Appendix

This appendix explains the specifications for the server and for its hardware options.

Before Reading This Manual

For Your Safety...

This manual contains important information, required to operate the server safely.
Thoroughly review the information in this manual before using the server. Especially note the points under "Safety Precautions", and only operate the server with a complete understanding of the material provided.
This manual and "Safety Precautions" should be kept in an easy-to-access location for quick reference when using this server.

Data Backup

To protect data stored in this device (including basic software and application software), perform backup and other necessary operations. Note that data protection is not guaranteed when repairs are performed. It is the customer's responsibility to maintain backup copies in advance.
In case of data loss, Fujitsu assumes no liability for data maintenance or restoration and damages that occur as a result of the data loss for any reason, except for items covered under warranty.

Advanced Safety Measures

The Products are designed, developed and manufactured as contemplated or general use, including without limitation, general office use, personal use, household use, and ordinary industrial use, but are not designed, developed and manufactured as contemplated for use accompanying fatal risks or dangers that, unless extremely high safety is secured, could lead directly to death, personal injury, severe physical damage, or other loss (hereinafter "High Safety Required Use"), including without limitation, nuclear reaction control in nuclear facility, aircraft flight control, air traffic control, mass transport control, medical life support system, missile launch control in weapon system. You shall not use this Product without securing the sufficient safety required for the High Safety Required Use. If you wish to use this Product for High Safety Required Use, please consult with our sales representatives in charge before such use.

Problems may occur with this device in the event of an instantaneous voltage drop of the power supply due to lightning, etc. To prevent an instantaneous voltage drop of the power supply, we recommend that you use an uninterruptible power supply system.

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Screen shot(s) reprinted with permission from Microsoft Corporation.

Remarks

■ Warning Descriptions

Various symbols are used throughout this manual. These are used to emphasize important points for your safety and that of others. The following are the symbols and their meanings.

⚠WARNING	Ignoring this symbol could be potentiality lethal.
⚠CAUTION	Ignoring this symbol may lead to physical injury and/or damage the server or hardware options.

The following symbols are used to indicate the type of warning or caution being described.

⚠	The triangle mark emphasizes the urgency of the WARNING and CAUTION. Details are detailed inside the triangle and above it.
🚫	A barred circle (🚫) warns against certain actions (Do Not). These actions are detailed inside the circle and above it.
❗	A black circle indicates actions that must be taken. These actions are detailed inside the black circle and above it.

■ Symbols

Symbols used in this manual have the following meanings.

IMPORTANT	These sections explain prohibited actions and points to note when using this device. Make sure to read these sections.
POINT	These sections explain information needed to operate the hardware and software properly. Make sure to read these sections.
→	This mark indicates reference pages or manuals.

■ Key Descriptions / Operations

Keys are represented throughout this manual in the following manner.

E.g.: [Ctrl] key, [Enter] key, [→] key, etc.

The following indicate pressing several keys at once:

E.g.: [Ctrl] + [F3] key, [Shift] + [↑] key, etc.

■ Entering Commands (Keys)

Command entries are displayed in the following way.

```
diskcopy a: a:
         ↑   ↑
```

- In the areas of the "↑" mark, press the [Space] key once.
- When using Windows or DOS OS, commands are not case sensitive.
- CD-ROM drive names are shown as [CD-ROM drive]. Enter your drive name according to your environment.
  [CD-ROM drive]:\setup.exe

■ Screen Shots and Figures

Screen shots and figures are used as visual aids throughout this manual. Windows, screens, and file names may vary depending on the OS, software, or configuration of the server used. Figures in this manual may not show cables that are actually connected for convenience of explanation.

■ Consecutive Operations

Consecutive operations are described by connecting them with arrows (→).

Example: Procedure of clicking the [Start] button, pointing to [Programs], and clicking [Accessories]
↓
Click [Start] → [Programs] → [Accessories].

■ Server Types

Server types are described as follows.

table: Server Types

Type	Expressions and abbreviations
Servers without an internal hard disk	Diskless type
Servers with an internal hard disk	SCSI Type
Stationary servers	Pedestal type
Rack mount servers using a Rack Conversion kit	Rack mount type

■ Product Names

The following expressions and abbreviations are used throughout this manual.

table: Abbreviations of Product Names

Product name	Expressions and abbreviations	
PRIMERGY TX200 S2	This server or the server	
Microsoft® Windows Server™ 2003, Standard Edition	Windows Server 2003, Standard Edition or Windows Server 2003	Windows
Microsoft® Windows Server™ 2003, Enterprise Edition	Windows Server 2003, Enterprise Edition or Windows Server 2003	
Microsoft® Windows® 2000 Server	Windows 2000 Server	
Microsoft® Windows® 2000 Advanced Server	Windows 2000 Advanced Server or Windows 2000 Server	
Microsoft® Windows® Preinstallation Environment	Windows PE	
Microsoft® Windows® Server Network Operating System Version 4.0 and Microsoft® Windows NT® Server, Enterprise Edition 4.0	Windows NT Server 4.0	
Microsoft® Windows® XP Professional	Windows XP Professional	
Microsoft® Windows® 2000 Professional	Windows 2000 Professional	
Microsoft® Windows NT® Workstation Operating System 4.0	Windows NT	

table: Abbreviations of Product Names

Product name	Expressions and abbreviations
Microsoft® Windows® 2000 Service Pack	Service Pack
Red Hat Enterprise Linux ES (v2.1 for x86)	Linux
Red Hat Enterprise Linux AS (v2.1 for x86)	
Red Hat Enterprise Linux ES (v3 for x86)	
Red Hat Enterprise Linux AS (v3 for x86)	

Reference Information

■ Software Manuals

Software Manual contains other reference information and cautions for ServerStart not described in this manual. Please read it before using ServerStart.

Software Manual is contained as a "README.TXT" file in the root directory on the ServerStart CD-ROM. Use a text editor to read it.

■ Latest Information about Software Provided with This Server

For the latest information regarding ServerStart and other software provided with this server, refer to the Fujitsu PRIMERGY website (http://primergy.fujitsu.com).

Warning and Caution Labels

Warning and caution labels are found on the server.
Do not remove or stain these labels.

Contents

Chapter 1 Overview

Chapter 2 Checking before OS Installation

Chapter 3 OS Installation Using ServerStart

Chapter 4 Manual OS Installation

Chapter 5 Operations after OS Installation

Chapter 6 High Reliability Tool

Chapter 7   Installing Hardware Options

Chapter 8   Configuring Hardware and Utilities

Chapter 9 Operation and Maintenance

Appendix

Chapter 1

Overview

This chapter explains component names and basic operations of this server, as well as an overview of the software provided with this server. In addition, the workflow, from placing the server to starting the operation, is also described.

1.1 TX200 S2

This server has the following features.

■ High Reliability

● Advanced Memory Protection Functions

The server supports the Chipkill function using PC2700-compliant memory (DDR 333 SDRAM) (256MB DIMM is not supported) and spare memory function to enable data recovery in the event of a memory error.

● Storage System Configuration

A storage system (RAID0/1/5/10) can be configured using an optional RAID card.
A failed hard disk unit in a storage system can be replaced or repaired without turning off the server and peripheral devices (a hot-plug is supported in configurations other than RAID0).

● Redundant Function

The power supply units and system fans can enable the redundant function using the PowerSupply Conversion kit. If one power supply unit or system fan fails, it can be replaced without stopping the system.

● Hardware and Software Designed for Data Security

Locks on the drive covers and the password setting in the BIOS Setup Utility protect hardware and data assets in the server against theft, ensuring data security.

● Proactive Fan Function

When a fan fails or the ambient temperature rises, the system fan speed is increased automatically to avoid increase in temperature in the server, ensuring stable server operation.

● High Reliability Tools

High reliability tools offer stable system operation. For information about high reliability tools, refer to "1.2.2 High Reliability Tools" (→pg.19).

■ High-speed Processing

● 64-bit Intel® Xeon™ Processors

The server can have up to two 64-bit Intel® Xeon™ processors for high-speed data processing (one processor in standard servers). The server supports the Hyper-Threading function that uses one physical CPU as two logical CPUs, providing high-efficiency and high-speed processing.

● PCI-X

The server uses PCI-X buses with a maximum data transfer speed of 1066MB/sec.

● Ultra320 SCSI

The Ultra320 SCSI interface, which provides a maximum data transfer speed of 320MB/sec, is supported, ensuring high-speed data transfer during disk access.

■ Excellent Scalability

● Maximum Memory Size of 6GB

In addition to the preinstalled 512MB memory, the system has three memory banks for supporting up to 6GB memory.

● Maximum Hard Disk Size of 2700GB

Up to six internal hard disk units can be installed in the 3.5-inch storage bays. When the internal hard disk unit bay conversion kit is used, three hard disk units can be added in the 5-inch storage bays. Thus, the server can have up to nine hard disk units. The hard disk size can be increased up to 2700GB.

● Five PCI Slots

The server has five PCI slots, including 64-bit, 133MHz PCI-X slots. Functions can be added by using expansion cards.

● Three 5-inch Internal Option Bays

The server has three 5-inch storage bays to accommodate up to two 5-inch internal options for an increasing amount of data (one bay is used for the standard CD-ROM drive unit).

● Rack Mount Type

With the Rack Conversion kit for TX200S2, the server can be installed on a rack.

1

Overview

1.2 Supplied Software

ServerStart for supporting setup and high reliability tools for avoiding problems during server operation are supplied with this server.

1.2.1 Setup Support Tool - ServerStart

ServerStart is a setup support tool that helps to install PRIMERGY.
It offers easy server installation and proper installation of recommended drivers.

■ Installing ServerStart

Installing ServerStart

Not using Server Start

■ User definition, access privileges, network settings
■ It is necessary to input successively for installation, resulting in more mistakes and longer time

Example:
Operations such as setting IP address, creating users, and registering computer name are required

Install & Setup
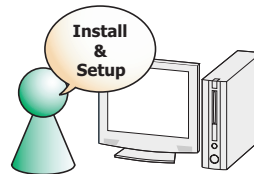
Using ServerStart

■ Auto installation of recommended drivers (SCSI, LAN, etc.) enables high reliable installation
■ High reliability tool can be installed automatically *1

Auto setup

ServerStart

Example:
Operations during OS installation is automated *2
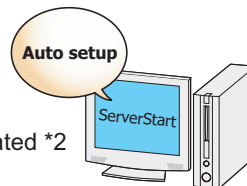
*1 High reliability tool is a software with comprehensive strength for stable system operation of the server management

*2 Some input (License window, etc.) and media repositioning are excluded

● Configuration File (SerStartBatch.ini)

A configuration file stores the server setup information configured in ServerStart. To create a configuration file, use the ServerStart floppy disk supplied with this server. Store only one file on each floppy disk. Do not set the ServerStart floppy disk to the write-protected state.
You can use any name for the configuration file. However, the file must be installed in the server as "SerStartBatch.ini". When installing the configuration file, make sure to save it as "SerStartBatch.ini" on the ServerStart floppy disk.
Start up ServerStart, insert the ServerStart floppy disk containing "SerStartBatch.ini", and click [Start] to install the server.

■ Intuitive User Interface

The intuitive user interface allows you to easily set the necessary information.

● Main Window

When ServerStart is started, the following window appears. The window and tool bar differ depending on the mode.
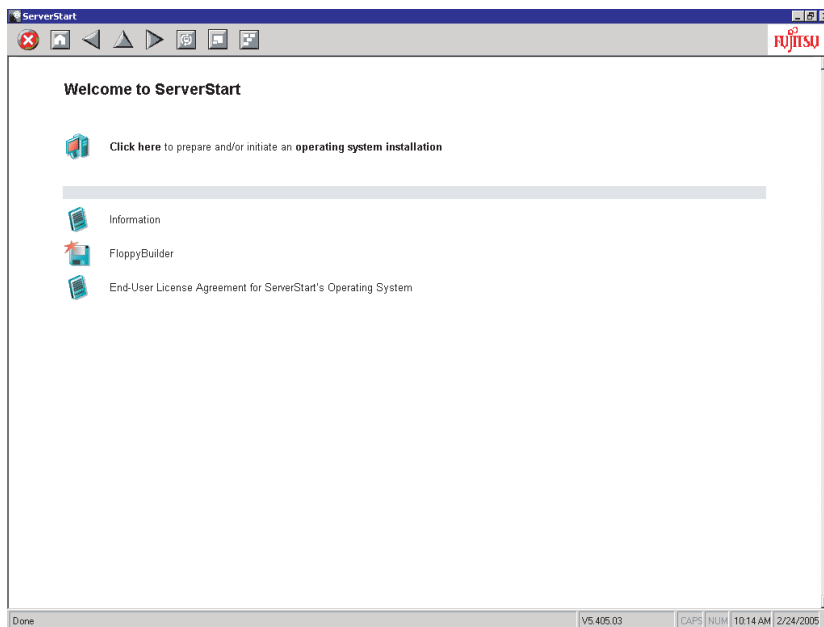
● **Tool Bar**

In Guide/Expert Mode

Ends ServerStart.   Brings you to the previous page.   Brings you to the next page.   Changes the size of icons.

Brings you to the main screen.   Brings you up one tier.   Resets the status function.   ON/OFF of the tree display is set. It doesn't support, and never click.
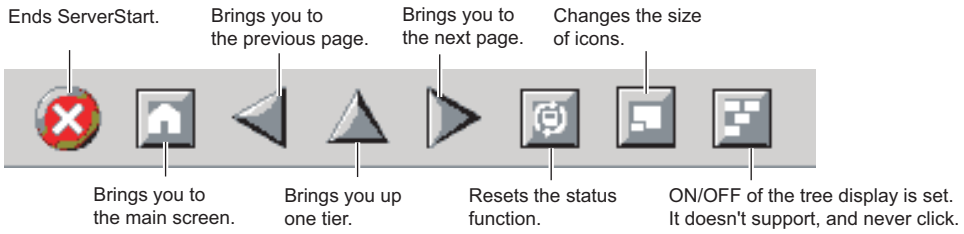
IMPORTANT

▸ While the wizard is running, do not click the ◁ △ ▷ icon to move to the previous or next window or to a different tree level. To move to a different window, click the [Previous], [Up], or [Next] button at the bottom of the wizard window.

● **Wizard Window**

Clicking a wizard displays a wizard window.
Set items in the wizard window. To move to a step in the next wizard window, click the operation button at the bottom of the window. Clicking the [help] button displays a tip for setting the item.
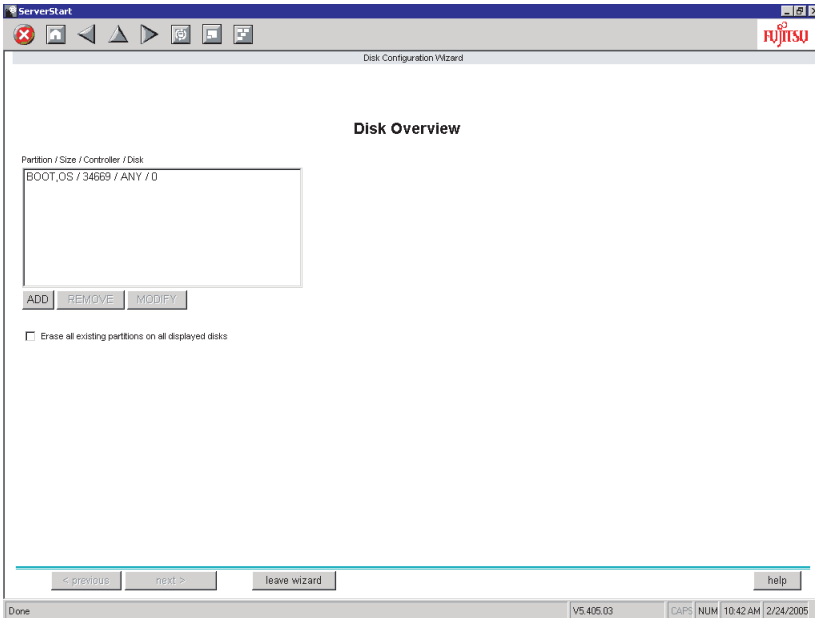
■ Network Configuration

ServerStart can configure a network at server installation.
For details on available network patterns, refer to "Using ServerStart to Configure the Network".

■ Automatic Driver Installation

Recommended drivers for automatically recognized expansion cards are installed with the server. This prevents possible mistakes in driver installation, such as installation of an older version or drivers which were not supplied with this server.

■ Automatic RAID Configuration

When an array controller card is used, specify the RAID type and the number of hard disk units before starting installation. A storage system can be configured without starting the RAID utility.

■ Remote Installation

ServerStart can be store resources necessary for installation, such as the OS and Service Pack, in a different server on the network and install the OS via the network. This method is used when the server does not have a CD-ROM or floppy disk drive.
SystemcastWizard Professional (optional) is a useful tool for extracting a lot of files in a short time.

1.2.2 High Reliability Tools

High reliability tools are a comprehensively useful set of software for stable system operations of the server. The following tools have respective roles to manage normal operations or recovery from errors:

- Server monitoring tools
- System diagnosis support tools
- LAN driver detailed setting tools

■ Server Monitoring Tools

The server monitoring tools monitor the hardware status on behalf of the administrator and notify him/her in the event of an error.

● Detecting a Server Failure Early [ServerView]

ServerView is software that monitors whether the server hardware is in a normal state to protect important server resources. When using ServerView, the server hardware is monitored all the time. If an error that could cause trouble is detected, the administrator is notified in real-time. This allows the server administrator to remove a system error early and avoid trouble.

● Array Configuration / Disk Management [RAID Management Tool]

RAID Management Tool is software that perform array configurations, disk initialization and storage system monitoring. When an event occurs, it leaves an event log in the event viewer's application logs. At the same time, a pop-up window indicates a hard disk failure, rebuild status, etc.

1

Overview

■ System Diagnosis Support Tools

The system diagnosis support tools are for supporting system diagnosis during normal operation or in the event of trouble.

● Solving Problems Early [DSNAP]

DSNAP is a command line utility for collectively acquiring failure investigation information. It makes easy to collect system file configuration information, setting major registries, and command line operation of the event log. When a problem occurs in your Windows Server 2003 / Windows 2000 Server system, DSNAP is used for a maintenance engineer to understand your system software configuration and settings correctly and to promote research smoothly. Provide this with memory dump to your maintenance engineer.

■ LAN Driver Detailed Setting Tools

These tools set details on the LAN, including the use of the Teaming (load balance) function and VLAN configuration.

● Intel® PROSet

Intel® PROSet is a tool for setting details on the LAN card when it is used with another LAN card or the onboard LAN for using the Teaming function or when it is used for configuring a VLAN.

● Broadcom Advanced Control Suite (BACS)

BACS is a tool for setting details on the onboard LAN when it is used to configure a VLAN.

1.2.3 Installing High Reliability Tools

You can install all high reliability tools provided with PRIMERGY by specifying them in "Application Wizard" when the OS is installed with ServerStart.

After manual OS installation, high reliability tools can be installed all at once, just as they are installed during OS installation with ServerStart.

In each case, the following high reliability tools are installed.

table: Installation of high reliability tools

High reliability tool	Batch installation
RAID Management Tool	A[*1]
ServerView	S
DSNAP	S
Intel® PROSet	A[*2]
Broadcom Advanced Control Suite (BACS)	A

A: Installed in any case

S: Installed if selected

*1: Will not be installed when a RAID controller is not installed

*2: Will not be installed when a LAN card (PG-1852/PG-1862/PG-1882/PG-1892) is not installed

IMPORTANT

‣ Linux does not support batch installation with ServerStart.

‣ ServerView must be configured after installation even when the high reliability tools have been installed at once with ServerStart. Refer to "Chapter 6 High Reliability Tool" (→pg.167).

‣ RAID Management Tool requires that ServerView have been installed. Be sure to install ServerView.

1

Overview

1.3 Component Names and Functions

This section explains the component names and functions of the server and baseboard.

1.3.1 Server (Front View)
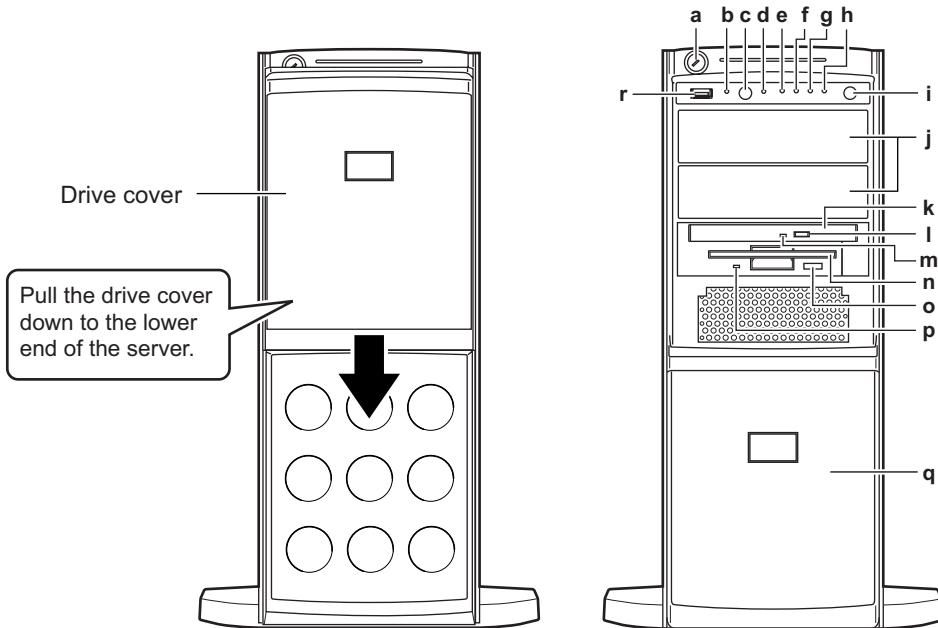
a Drive cover key

When the drive cover key is locked, the drive cover cannot be slid. We recommend you lock it to prevent unauthorized access to the inside of the server.

b System identification LED

This LED is used for maintenance. When pressing the system identification LED button, the front and rear LEDs are lit blue so that the locations of devices being maintained can be determined.

Also, the [System Identification LED Display] button of ServerView can be used to light them.

c System identification LED button

When pressing this button, the front and rear system identification LEDs are lit blue so that the locations of devices being maintained can be determined.

d Reset switch

Pressing this switch resets and restarts the system.

IMPORTANT

▶ Do not restart the system when the hard disk access LED is blinking.
Data in the hard disk may be damaged.

e Maintenance switch

This switch is used only by maintenance personnel. Do not touch this.

f System status LED (⚠)

This LED lights or blinks in amber when an error is detected in the server components. If this LED lights or blinks, contact your maintenance engineer or device administrator.

g Hard disk access LED (▢)

This LED blinks when data is being written to or read from the hard disk.

However, this LED does not light when an array system is configured using a RAID Ctrl 2-Channel 128MB w/ BBU (PG-142E3). Check the hard disk access display LED of each internal hard disk for the access status.

h Power LED (⏻)

This LED is lit green when the server is turned on.

This is lit amber when the server is not turned on (standby mode).

This does not light when the power cable is unplugged from the outlet.

i Power switch

Press this switch to turn the server on.

IMPORTANT

▶ Do not turn the server off when the hard disk access LED is blinking. Data in the hard disk may be damaged.

j 5-inch storage bay

Contains a 5-inch internal device.

k CD-ROM drive

Reads data or programs from a CD-ROM.

l CD-ROM eject button

Press this button to eject a CD-ROM.

Do not press this when the CD-ROM access LED is on.

m CD-ROM access LED

This LED blinks when data is being read from a CD-ROM.

n Floppy disk drive

Writes/reads data to/from a floppy disk.

o Floppy disk eject button

Press this button to eject a floppy disk.

Do not press this when the floppy disk access LED is on.

p Floppy disk access LED

This LED blinks when data is being written to or read from a floppy disk.

q Drive cover

This slides up and down.

r USB port (�)

Connects peripheral equipment conforming to the USB standard (2.0 or 1.1).

1

Overview

■ Inside the Hard Disk Cover

Hard disk cover

Remove the hard disk cover.

a
b
c
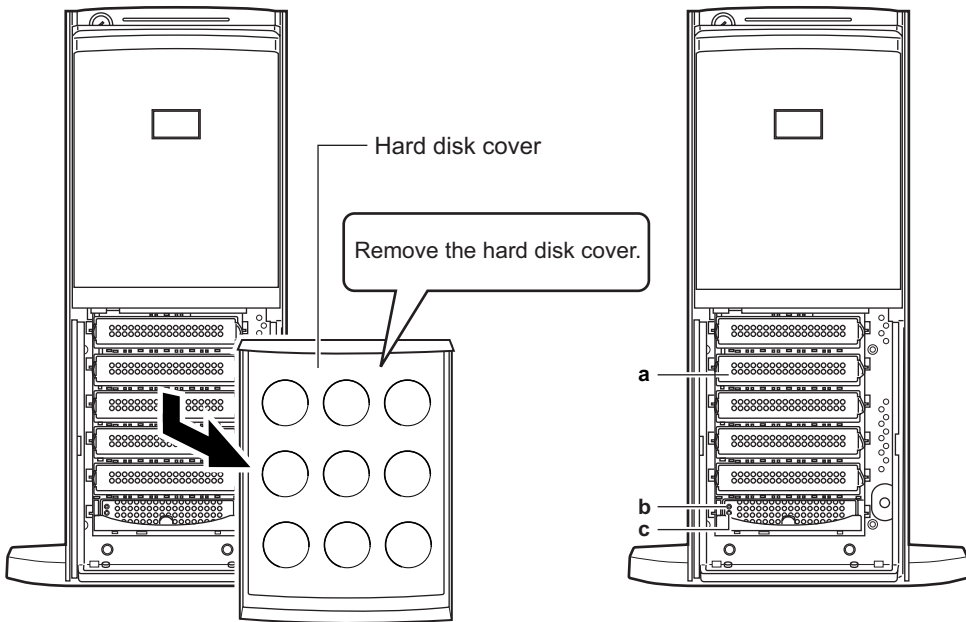
a 3.5-inch storage bay

Contains an internal hard disk.

b Hard disk access display LED (◎)

This LED is lit green when data is being written to or read from the hard disk.

table: Meaning of the Hard Disk Access Display LED

LED status	Hard disk access status
Off	Hard disk is not accessed
Lights in green	Hard disk is accessed

c Hard disk failure LED (⊗)

During an array system configuration, this LED is lit amber when an error is detected in the internal hard disk unit.

It is lit or blinks depending on the hard disk status as follows.

table: Meaning of the Hard Disk Failure LED

LED status	Hard disk status
Off	In normal mode or hot spare mode
Lights in amber	Error detected in the hard disk (in an array configuration)
Blinks in amber	Rebuilding or faulty hard disk replacement in progress

1.3.2 Server (Rear View)
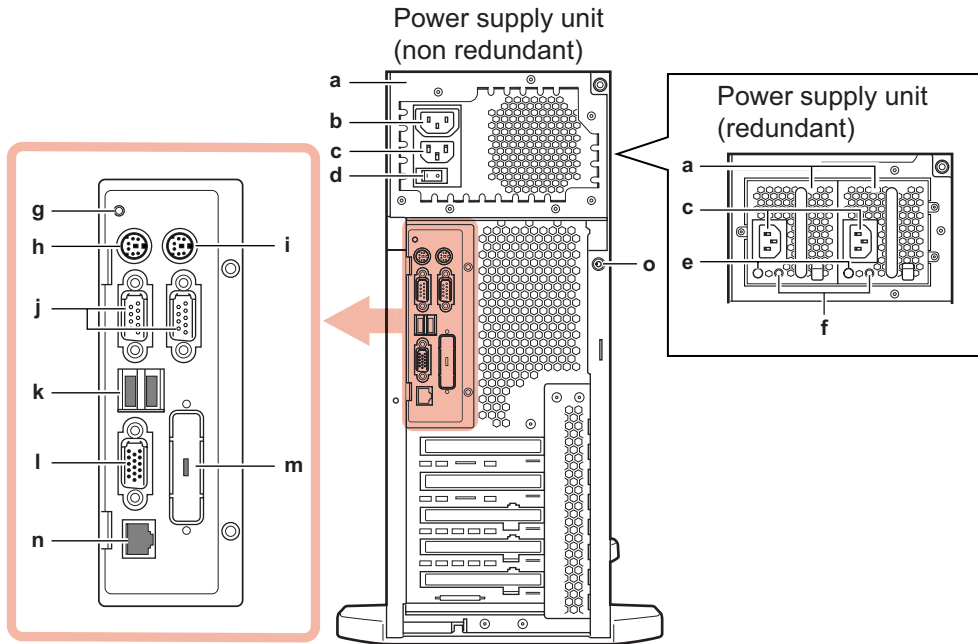
a Power supply unit

When Power Supply Conversion kit is used, two power supply units are installed to enable the redundant power function.

b Outlet (on the standard power supply only)

This cannot be used. Do not connect a power cable of peripheral devices.

c Inlet

Power cables are plugged in.

d Main switch (on the standard power supply only)

Turn this switch to "1" to turn on the main power of the server.

Once the main power is turned on, you do not have to turn this switch every time you start up the server.

e Power status LED (on the redundant power supply only)

This LED is on, depending on the power supply status as follows.

table: Meaning of the Power Status LED

LED status	Power supply unit status
Lights in green	In normal mode (operating)
Lights in amber	In normal mode (standby)
Off	Power not supplied (power off)

f Power supply unit status LED (on the redundant power supply only)

This LED is on, depending on the power supply unit status as follows.

table: Meaning of the Power Supply Unit Status LED

LED status	Power supply unit status
Lights in red	Failure detected
Off	Power off or normal power supply

g System status LED / System identification LED

This LED lights or blinks in amber when an error is detected in the server components. If this LED lights or blinks, refer to "Contact Information" in "Start Guide", and contact your maintenance engineer or device administrator.

POINT

> ▶ This LED is lit when the server is in standby mode (when the AC power is on and the DC power is off), but this does not indicate an error.

When pressing the system identification LED button located on the front of the server, the front and rear LEDs are lit blue so that the locations of devices being maintained can be determined. Also, the [System Identification LED Display] button of ServerView can be used to light them.

h Keyboard port (⌨)

A keyboard is plugged in.

i Mouse port (🖱)

A mouse is plugged in.

j Serial port (|◦◦|)

Cables of peripheral equipment conforming to the RS-232C standard such as modems are plugged in.
The left port is Serial Port 1, and the right port is Serial Port 2.
Serial Port 1 (left) can be used for server management when the setting is changed with the BIOS Setup Utility. For how to use the server management port, refer to "Appendix C Using the Server Management Port" (→pg.306).

k USB port (⛌)

Connects peripheral equipment conforming to the USB standard (2.0 or 1.1).

l Display port (▭)

A display cable is plugged in.

m Parallel port (🖶) (optional)

A printer cable is plugged using the optional parallel port expansion kit.

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Overview

n LAN (10/100/1000BASE-T) port (⊞)

An Unshielded Twisted Pair (UTP) cable is plugged in.

For 1000Mbps connection, a category 5 enhanced cable is required.

For 10Mbps/100Mbps connection, a category 5 or higher cable is required.
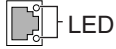
LED

The meaning of the LED is shown in the table below.

table: Meaning of the LAN Port LED

LED location	LED status	Connection status
Upper LED	Lights in amber	Connection established at 1000Mbps
	Lights in green	Connection established at 100Mbps
	Off	Connection established at 10Mbps
Lower LED	Lights in green	Link is being established
	Blinks in green	Data is being transferred

o Side cover lock

When the side cover is locked, it cannot be opened. We recommend you lock it to prevent unauthorized access to the inside of the server.

1.3.3 Server (Internal)
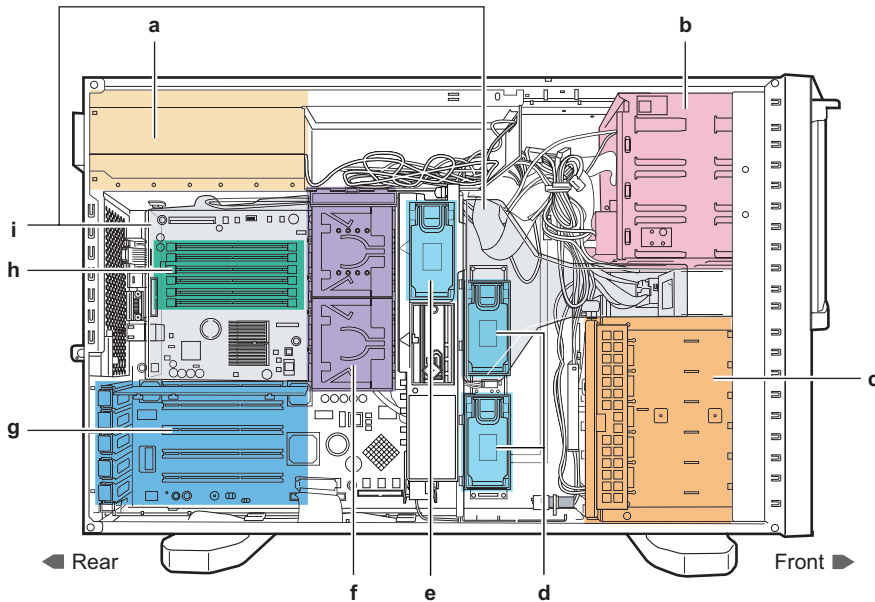
a Power supply unit

b 5-inch storage bay

Contains a 5-inch internal optional device.

c 3.5-inch storage bay

Contains an internal hard disk.

d System fan

Two fans are installed by default. When Power Supply Conversion kit is used, four fans are installed to enable the redundant function.

e CPU fan

One fan is installed by default. If a CPU is added, a CPU fan is also added.

f CPU socket

Install the CPU. One socket is installed by default. Up to two sockets can be installed.

g PCI slot

Contains extension cards that enhance the server functions.

PCI cards with the PCI bus interface can be installed in the PCI slots.

h Memory slot

Contains memory.

i Ventilation system cover

1.3.4 Baseboard
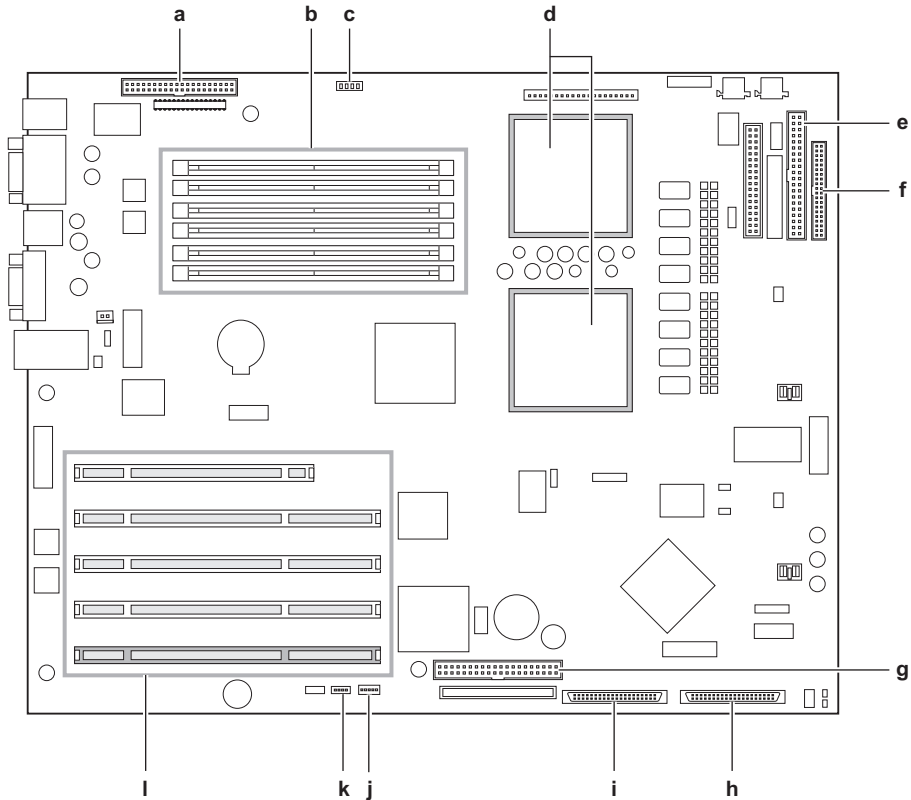
a Parallel port

A parallel port cable is plugged in when an optional parallel port is used.

b Memory slot

Contains memory. One memory bank consists of Slots A and B in this server. Be sure to install a pair of memory modules.

c Switch block

For details about switch settings, refer to "8.1 Switch Settings" (→pg.230).

d CPU Socket 0/CPU Socket 1

Install the CPU. The upper is CPU Socket 0 and the lower is CPU Socket 1 in the above figure.

e Secondary IDE port

An IDE cable of the CD-ROM drive is plugged in.

f Floppy disk drive port

A floppy disk drive cable is plugged in.

g Primary IDE port

This server does not use this port.

h SCSI port A

An internal hard disk unit is plugged in.

i SCSI port B

An internal hard disk unit or a 5-inch internal SCSI device is plugged in.

j Internal power port

An RSB power cable is plugged in when a remote service board is installed.

k Server control port

A server control cable is plugged in when a remote service board is installed.

l PCI slot

Contains an expansion card. PCI slots (1 to 5) are numbered from bottom to top in the above figure.

1.4 Standard Operations

This section explains such standard operations as turning the server on/off and inserting/ejecting CD-ROMs.

1.4.1 Sliding the Drive Cover

1 Turn the drive cover key counterclockwise to unlock the cover.
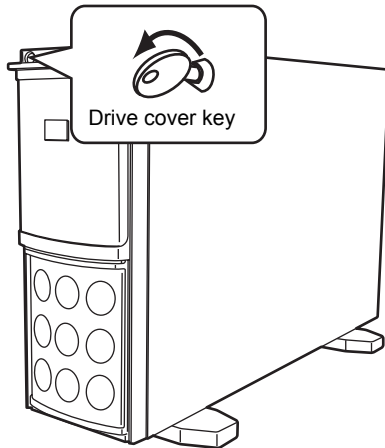
Drive cover key

2 Slide the drive cover.

Slide the drive cover down to use the floppy disk drive, CD-ROM drive, or a 5-inch internal option device.
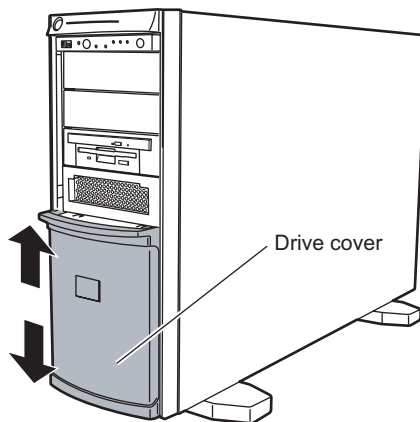
Drive cover

POINT

▸ The driver cover key is unique to each device. Do not lose the key. If the key is lost, the lock must be broken and replaced on a paid basis. Manage the drive cover key very carefully. Refer to "Contact Information" in "Start Guide", and contact your maintenance engineer if you lose it.

1

Overview

1.4.2 Opening the Rack Door

This section explains how to open the front and rear doors of the 40U standard rack.
Refer to the manual included with the rack for procedures on opening other rack doors.

■ Opening the Front Door

1 Turn the rack key and pull the rack handle up.

2 Turn the handle in the direction of the arrow and pull it forward.

Turn and then pull
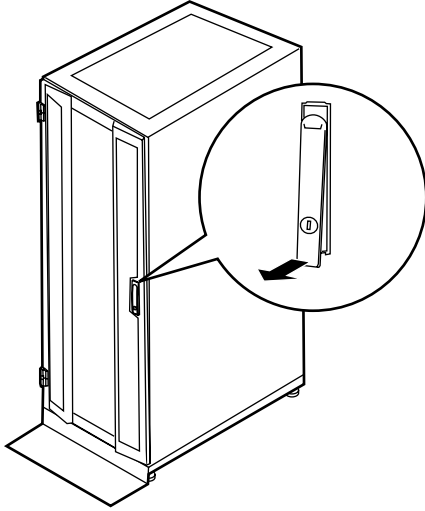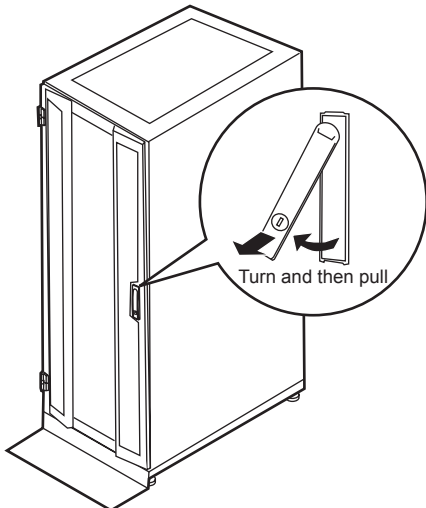
■ Opening the Rear Door

1 Turn the rack key and pull the rack handle up.

2 Turn the handle in the direction of the arrow and pull it forward.

Turn and then pull
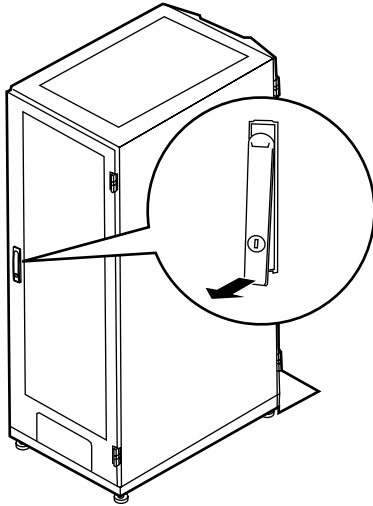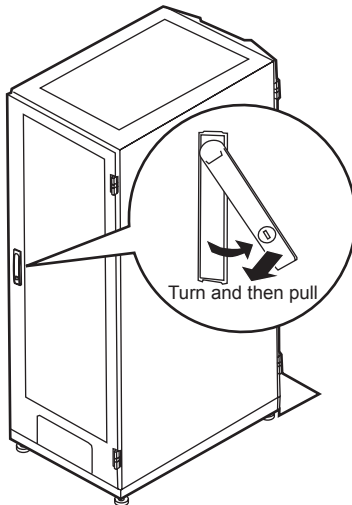
⌕POINT

▸ Unless you are inserting/removing media or turning the power on/off, keep the door closed. Doing so blocks electric waves from cell phones, etc.
▸ Do not lose the keys. Refer to "Contact Information" in "Start Guide", and contact your maintenance engineer if you do lose them.

1

Overview

1.4.3 Turning On the Server

⚠ CAUTION 🚫 Do not
- Do not move, strike, or shake the server when it is turned on. This can damage the hard disk in the server and cause data loss.
- Turn the server on when the temperature is in its operating environment range (10-35°C). For details about the operating environment, refer to "Start Guide" and "Safety Precautions".
  When operating the device outside of this operating environment, the server may operate improperly, damage data etc.
  Furthermore, Fujitsu cannot be held responsible for any related damage, malfunction, or loss of data, etc.
- The fans rotate at high speed immediately after the server is turned on, but this is not defective. When the temperature is in the server's operating environment range (10-35°C), they start to rotate at normal speed later.
  Also, when the ServerView is installed, the fans rotate at high speed after the OS is started, but this is not defective. When the temperature is in the server's operating environment range (10-35°C), they start to rotate at normal speed later.
- Be sure to wait for 10 seconds or more after shutdown before turning the server on.

1 Slide the drive cover.

→"1.4.1 Sliding the Drive Cover" (pg.31)

2 Make sure that the floppy disk drive and CD-ROM drives are empty.

3 Turn on the display and peripheral devices.

4 Turn the main switch on the server rear panel to "1".

🔎 POINT
- ▸ Once you turn it to "1", you do not have to activate it every time you start up the server. Turn this switch only when it is set to "0".

5 Press the power switch on the front of the server.

The server's power LED is lit green.

When the power is turned on, the server performs Power On Self Tests (POST). If any abnormalities are detected by POST, error messages are displayed ("9.2.2 Error Messages" (→pg.268)).

The server's power
LED is lit green
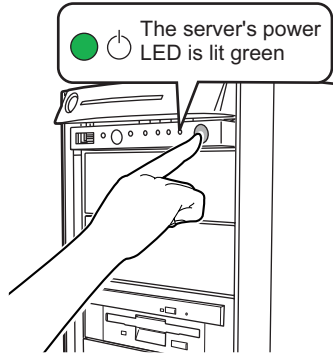
POINT

▶ The time to turn on the server can be set with the ASR setting (on the [Power On/Off] tab) using ServerView supplied with this server. For details, refer to "3.2 Settings for Server Monitoring" in "ServerView User's Guide".

1.4.4 Turning Off the Server

⚠️**CAUTION** ⚠️
- Follow the procedures below to turn off the server. Data can be lost if these procedures are not followed correctly.
- In the event of smoke or sparks, immediately unplug the electric cord. Failure to do so could lead to a fire or electrocution.

1 Slide the drive cover.
→"1.4.1 Sliding the Drive Cover" (pg.31)

2 Make sure that the floppy disk drive and CD-ROM drives are empty.

3 Shut down the OS.
In the following cases, the server is turned off after the OS is shut down (Step 4 is not necessary).
- Windows OS
- ServerView is installed

In other cases, make sure that the floppy disk and hard disk access LEDs are off when the OS is shut down.

4 Press the power switch on the front of the server.
The server's power LED is lit amber.

The servers power LED is lit amber
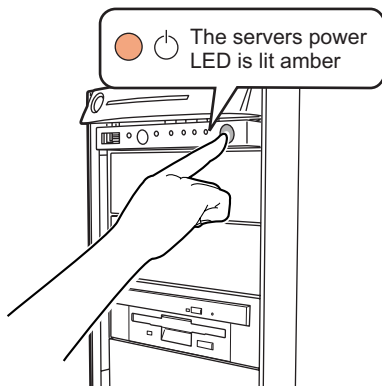
5 Turn off the display and peripheral devices.

⚠️**CAUTION** ⚠️
- Be sure to wait for 10 seconds or more after shutdown before turning the server on.

🔎**POINT**
▶ The time to turn the server off can be set with the ASR setting (on the [Power On/Off] tab) using ServerView. For details, refer to "3.2 Settings for Server Monitoring" in "ServerView User's Guide."
▶ To turn the power off completely, turn the main switch on the rear of the server to "0" (for the standard power supply) or remove the power plug from the outlet.

■ Cautions when Turning the Power Off (When the OS is Windows Server 2003 or Windows 2000 Server)

- For Windows Server 2003
  "Do Nothing", "Prompt Input", "Standby", "Hibernation", or "Shutdown" can be specified as the operating mode of the power switch in the OS settings (normally, "Shutdown" is specified).
- For Windows 2000 Server
  "Standby", "Hibernation", or "Power Off" can be specified as the operating mode of the power switch in the OS settings (normally, "Power Off" is specified).

On this server, functions corresponding to "Standby" and "Hibernation" are supported as BIOS and hardware functions. However, some drivers and software installed in the server do not support these functions. For this reason, functions corresponding to "Standby status" and "Hibernation status" are unavailable on this server.

When the operating mode is set to "Standby" or "Hibernation", the system may operate improperly or hard disk data may be corrupted. For details about operating mode settings, refer to the OS manual.

1

Overview

1.4.5 Inserting and Ejecting a Floppy Disk

■ Cautions

When using floppy disks, note the following points to avoid failures:

- Do not expose the disk to any fluids.
- Do not open the shutter of the floppy disk and touch the disk surface.
- Do not bend the floppy disk or place heavy objects on it.
- Do not expose the floppy disk to strong magnetic fields.
- Do not drop the floppy disk on hard surfaces.
- Do not store the disk in extremely hot or cold conditions.
- Do not store the disk in humid or dusty conditions.
- Do not put layers of labels on the floppy disk. Doing so may cause the drive to be clogged with the disk.
- Keep the disk away from condensation or water droplets.

■ Inserting the Floppy Disk

Insert the floppy facing the label up into the floppy disk drive at the side with a shutter. It makes a clicking sound and, the floppy disk eject button pops out.
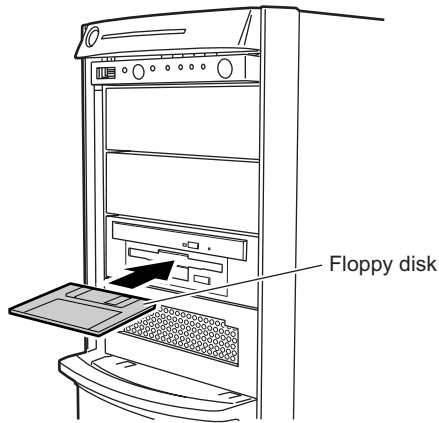
Floppy disk

■ Ejecting the Floppy Disk

Make sure that the floppy disk access LED is off. Press the floppy disk eject button.

Floppy disk access LED

Floppy disk eject button
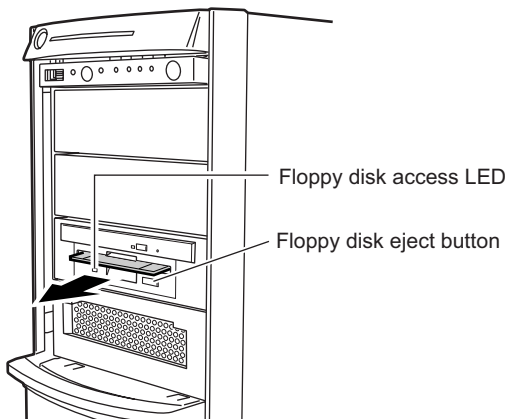
IMPORTANT

▶ Do not eject the floppy disk while the floppy disk access LED is on. Doing so may damage data.

1.4.6 Inserting and Ejecting a CD-ROM

This section explains how to insert and eject a CD-ROM.
When using CD-ROMs, note the following points to avoid failures:

■ Cautions for Handling CD-ROMs

- Do not put labels, or apply ink or pencil, to both sides of the CD-ROM.
- Do not touch or scratch the data side of the CD-ROM.
- Do not bend the CD-ROM or place heavy objects on it.
- When cleaning the CD-ROM, use a slightly wet cloth to wipe it from the center to the edge, and then wipe it with a dry cloth.
- Do not expose the disk to any fluids.
- Do not store the disk in extremely hot or cold conditions.
- Do not store the disk in humid or dusty conditions.

■ Cautions for Handling Drives

- Do not use CD-ROMs that do not follow the notes described in "■ Cautions for Handling CD-ROMs" (→pg.39), or distorted, broken, or cracked CD-ROMs. Doing so may cause failures. If the above CD-ROMs are used and the drive fails, the warranty will be invalidated.
- This server supports only circular CD-ROMs. Do not use noncircular CD-ROMs. Doing so may cause failures. If noncircular CD-ROMs are used and the drive fails, the warranty will be invalidated.
- If commercially available CD-ROM cleaning disks are used, dust may get on the lens. Do not use CD-ROM cleaning disks.
- Some copy control music CDs cannot be used.
- This server supports CD-ROMs with the following logo. Do not use CD-ROMs without the logo. Doing so may cause failures.

1 Overview

■ Inserting the CD-ROM

1 Make sure the server is turned on and press the CD-ROM eject button.

The CD-ROM tray comes out.

CD-ROM eject button
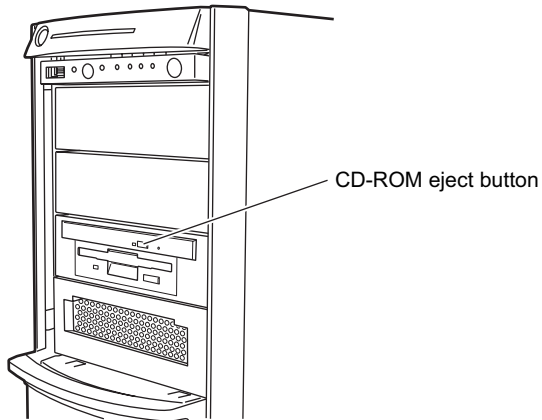
2 Place the CD-ROM (label side up) onto the tray.
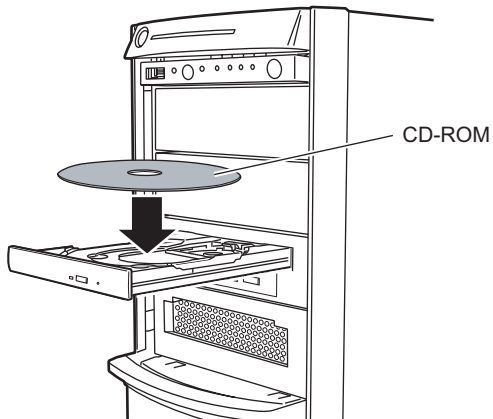
CD-ROM

3 Move the tray back.

Push the tray gently until it clicks into position.

POINT

▶ Push the center of the front panel gently until the tray clicks into position.

■ Ejecting the CD-ROM

To eject the CD-ROM, check that the CD-ROM access LED is off and then press the CD-ROM eject button.

1.5 Workflow

To start the server operation, perform the following procedures.

1

Overview

Installing the server

Referring to "Safety Precautions" and "Start Guide" install the server to a suitable place.

▼

Preparing the server

- Install hardware options
- Set hardware
Referring to "2.1 Preparation on the server", "Chapter 7 Installing Hardware Options" and
"Chapter 8 Configuring Hardware and Utilities".

▼

Selecting the installation method

Referring to "2.2 Selecting the Installation Method" decide what installation method to use.
ServerStart, a software that enables everything from OS installation/setup to the installation of high
reliability tools to be performed in one operation, comes with this server. It is recommended that
ServerStart is used to perform installation.

▼

Checking precautions on installation

Before installing the OS check the precautions on installation by referring to "2.3 Precautions on Installation".

▼ OS installation ▼

Using ServerStart
Referring to "Chapter 3 OS Installation Using ServerStart" perform OS installation.

Manual installation
Referring to "Chapter 4 Manual OS Installation" perform OS installation.

▼

Installing hardware options

Referring to "Chapter 7 Installing Hardware Options" install the hardware options.

▼

Procedures before operation

Before operating the server refer to "Chapter 5 Operations after OS installation".

▼

High reliability tool installation

When the OS is installed manually, it is necessary to install high reliability tools ServerView requires
settings before server operation. For installation method and details about each high reliability tool, refer
to "Chapter 6 High Reliability Tool".

▼

Start operations

Chapter 2

Checking before OS Installation

This chapter explains the preparation on the server and cautions necessary before OS installation. Please read this chapter before starting installation.

2.1 Preparation on the Server

Before starting installation, install internal options to the server and perform necessary hardware settings.

2.1.1 Installing Internal Options

Internal options are classified into those that must be installed before the OS installation and those that must be installed after the OS installation.

For installation procedures, refer to "Chapter 7 Installing Hardware Options" (→pg.173).

● Internal Options That Must be Installed before the OS installation

- Memory modules
- CPUs
- Expansion cards

● Internal Options That Must be Installed after the OS installation

- Optional SCSI devices
- Internal hard disk units where the Operation System is not installed

IMPORTANT

▶ If an internal option device that must be installed after the OS installation has been already installed, remove the device, install the OS, then reinstall the device.

■ Cautions for Installing an Expansion Card

When using an expansion card, read the notes on the expansion card.

■ Cautions for Installing an Optional SCSI Device

When adding an optional SCSI device (DAT, etc.) using a SCSI card, connect it after installing the OS. Connecting it before OS installation may result in improper drive letter assignment.

■ Cautions for Installing a Memory Module

This server supports up to 6GB of memory. However, the maximum installable size varies depending on the OS. Furthermore, since the server uses part of the memory as PCI resources, the maximum available size is limited. The following shows the maximum installable size and the maximum available size.

table: Maximum Installable Size and Maximum Available Size

OS	Installed memory size	Available memory size
Windows 2000 Server [1] Windows Server 2003, Standard Edition [1]	3.0GB or smaller	Same as the installed memory size
	3.5 to 4.0GB	Installed memory size - (0.1 to 0.6GB) [2]

table: Maximum Installable Size and Maximum Available Size

OS	Installed memory size	Available memory size
Windows 2000 Advanced Server Windows Server 2003, Enterprise Edition	3.0GB or smaller	Same as the installed memory size
	3.5 to 6.0GB	Installed memory size - (0.1 to 0.6GB) [*2]

*1: Windows 2000 Server and Windows Server 2003, Standard Edition support up to 4GB of memory.

*2: Because 0.1 to 0.6 GB of memory is used as PCI resources, the available memory size varies depending on the installed card.

IMPORTANT

BIOS setting for installing 4GB or more of memory

▸ To install 4GB or more of memory, select the [Advanced System Configuration] submenu from the [Advanced] menu of the BIOS Setup Utility and set [Remap PCI Memory Gap] to "Enabled". For more details, refer to "8.2.8 Advanced System Configuration Submenu" (→pg.241).

● **Cautions Applicable When the OS is Windows Server 2003, Enterprise Edition or Windows 2000 Advanced Server**

When installing 4GB or more of memory in a server operating with Windows 2000 Advanced Server or Windows Server 2003, Enterprise Edition, the /PAE option in the "Boot.ini" file must be described. For the procedure for editing the "Boot.ini" file, refer to the manual supplied with the OS.

IMPORTANT

▸ The "Boot.ini" file is an important file for the system. If the file is edited improperly, the system may not start up. Edit it carefully.

"Boot.ini" file description example

```
[operating systems]
multi(0)disk(0)rdisk(0)partition(1)?WINNT="Microsoft
Windows 2000 Advanced Server" /PAE /fastdetect
```

■ LAN Cable

Be sure to connect the LAN cable when the server is not connected to the Internet. If the OS is installed or applications are automatically installed without connecting the LAN cable to the LAN card, an error may be recorded in the event viewer after setup completes.

IMPORTANT

▸ Connecting to the Internet during setup can cause security problems. Do not connect to the Internet until the setup completes.

2.1.2 Hardware Settings

Before starting installation, set necessary hardware, such as the BIOS Setup Utility.

■ BIOS Setup Utility

The BIOS Setup Utility must be set in the following cases. For details on how to set the BIOS Setup Utility, refer to "8.2 BIOS Setup Utility" (→pg.231).

● Changing the Boot Drive

To change the boot drive, start up the BIOS Setup Utility, select [Boot Option], and set the boot drive.
→"8.2.4 Boot Options Submenu" (pg.236)

● Performing Remote Installation

Before performing remote installation of ServerStart, use the following procedures to enable network startup (PXE). In addition, check the MAC address.

1 Take the following steps in the BIOS Setup Utility.

1. Start the BIOS Setup Utility.
   →"8.2.1 Starting and Exiting the BIOS Setup Utility" (pg.231)
2. Select [Boot Options] and press the [Enter] key.
   The Boot Options menu window appears.
3. Change [MultiBoot for HDs] to [Enabled].
4. Press the [Esc] key and select the [Advanced] menu.
5. Select the [Peripheral Configuration] submenu and change [LAN Remote Boot] to [PXE].
   →"8.2.6 Peripheral Configuration Submenu" (pg.238)
6. Press the [Esc] key. Select [Save Changes & Exit] from the [Exit] menu to exit the BIOS Setup Utility.
7. Start the BIOS Setup Utility again.
8. Select the [Boot Option] submenu from the [Main] menu. Press the [Enter] key.
   The Boot Option submenu window appears.
9. Change the [Boot Sequence] settings as shown below.

```
1 BootManage PXE, Slot 0400
2 CD-ROM
3 Removable Device
4 Hard Drive
```

10. Exit the BIOS Setup Utility and turn the server off.

2 Check the MAC address.

Start up the server from the network.
The MAC address is displayed as shown below.

```
CLIENT MAC ADDR: XX XX XX XX XX XX
```

The MAC address is required for remote installation. Write it down.

POINT

▶ You can turn the power on from a client (via a LAN) by utilizing the Wakeup On LAN (WOL) function. Refer to "5.5.5 Turning the Power On via a LAN" (→pg.155).

IMPORTANT

▶ Be sure to install ServerView to control the power supply via a LAN.

■ SCSI Setup Utility

The SCSI Setup Utility is used for setting the onboard SCSI of this server.
Check or change settings as necessary before installation, referring to "8.3 SCSI Setup Utility" (→pg.251).

2.2 Selecting the Installation Method

When installing the OS for the first time, there are multiple installation methods. Refer to the following to decide on the method.

⌕POINT

▶ To set up multiple servers with the same model and configuration, refer to "3.5 Installation on Multiple (the Second and Subsequent) Servers" (→pg.108).

What OS will you use? — Linux → For the use of Linux, refer to the Fujitsu PRIMERGY website (http://primergy.fujitsu.com).

Windows Server 2003 /Windows 2000 Server

Will you use ServerStart? — No → Installation is performed manually. Refer to "4.2 Starting Manual Installation" perform installation.

Yes

Refer to "3.1 Guided Mode" perform installation.

* If you follow the wizard setup will be performed correctly.

⌕POINT

When setting setup information in advance on the client computer, refer to "3.2 Preconfiguration Mode" and perform installation.

■ Installation Using ServerStart

When an OS is installed using ServerStart, the driver for the expansion card that is automatically recognized will be installed automatically. In addition, high reliability tools and array controller administrative tools are installed automatically. Installation using ServerStart is recommended. For features of ServerStart, refer to "1.2.1 Setup Support Tool - ServerStart" (→pg.16).

■ Installation While Maintaining the Established RAID Environment

In guided mode or preconfiguration mode, select [Use existing array] for [Configuration Mode] at [RAID Wizard] (in the [RAID Configuration] window) and install the OS.

■ Installation Using ServerStart While Maintaining the Existing Partitions

In expert mode, start up Disk Manager, format the installation partition, and install the OS.

2.3 Precautions on Installation

Read the following notes before starting OS installation.

2.3.1 Installation Partition Size

For installation using ServerStart, the installation partition size can be set as follows, depending on the OS to be installed and format.

table: Installation Partition Size

Available size	Windows Server 2003	Windows 2000 Server
Minimum	2200MB	2048MB
Maximum	2TB	2TB

● **Notes**

- When you want to set the OS and BOOT partitions in different partitions, specify the partition size directly.
  (The BOOT partition is the partition for startup. Minimum information required for startup, such as "ntldr", is stored.
  The OS partition is the partition for installing the OS.)

- In either of the following cases, specify a partition size less than 2TB.
  - When the same partition is specified as the OS and BOOT partitions
  - When different partitions are specified as the OS and BOOT partitions

- The OS cannot be installed in a partition larger than 2TB.

2

Checking before OS Installation

2.3.2 Notes on Configuring RAID

Take the following notes when you configure a RAID system.

■ Hardware Configuration

- Only internal hard disk units can be used.
- Be sure to use hard disk units of the same model and with the same capacity.
- Up to six hard disk units can be installed in the standard server. When the internal hard disk unit bay conversion kit is used, up to nine units can be installed. Do not set the number of units more than the maximum.
- The number of units that can be set at each RAID level is as follows:
  - RAID level 0: 2 to 9 units
  - RAID level 1: 2 units
  - RAID level 5 (recommended): 3 to 9 units
  - RAID level 10: Even number of units between 4 and 8

IMPORTANT

▶ When the OS is installed using ServerStart, only one RAID card can be installed. If you need more cards, install them after OS installation.

■ Array Configuration

The following shows the pack order of hard disk units for a two-channel configuration.
 For more details on the array configuration, refer to "PRIMERGY ServerBooks" supplied with the server, and "Supplement" supplied with options.

table: Array Configuration

Item	Contents
Number of physical packs	1
Number of system drives	1
Pack order of hard disk units	Channels 0 and 1 are packed alternately in ascending order of SCSI-ID set for the hard disk units (in a two-channel configuration). E.g.:(In a two-channel configuration) Pack A-1 Channel 0 SCSI-ID 0 Pack A-2 Channel 1 SCSI-ID 0 Pack A-3 Channel 0 SCSI-ID 1 Pack A-4 Channel 1 SCSI-ID 1 Pack A-5 Channel 0 SCSI-ID 2 When a hot spare is specified, the hard disk unit with the smallest channel number and the smallest SCSI-ID will be used as the hot spare hard disk unit (normally, Channel 0 and SCSI-ID 0).

■ Checking before OS Installation

- When a RAID-configured disk is used
  Unnecessary partition information and array configuration information is sometimes written to hard disks that have been previously used and problems that cannot be anticipate may occur with the same data.
  When connecting a previously used hard disk to this server, perform low level format in advance on another system and then connect to this server. For details about low level formatting, refer to the manual that comes with system being used. When performing low level formatting on a hard disk used in this server, refer to "8.3.6 Formatting Hard Disks Physically" (→pg.258).
- Number of disk units
  If the number of actually installed units is smaller than the setting for the number of units (+1 when a hot spare is specified), installation using ServerStart is aborted because of an error.
  When the number of installed disk units is greater than the setting, the disk units are set up according to the setting. Extra units will be configured as standby disk units. You can add a physical pack later. For more details, refer to "PRIMERGY ServerBooks" supplied with the server, and "Supplement" supplied with options.

2.3.3 Notes on a Multiple LAN Adapter Configuration

Using the OS installation wizard of ServerStart, you can configure multiple LAN adapters (network adapters) on the system. However, there are the following limitations.

● Adapter Numbers

To configure multiple LAN cards, select the adapter numbers in order of Adapter 1 and Adapter 2, and enter settings for each adapter. Note that the order of adapter numbers is not necessarily the same as the order of slots for the installed LAN adapters. This means that the setting for Adapter 1 is not always applied to the onboard LAN. After installing the OS, check the LAN adapters to make sure that they are configured as intended.

2.3.4 Cautions for Using ServerStart

■ Operating ServerStart

Most ServerStart operations are performed with the mouse. Items may not be moved with the [Tab] key or cursor keys. Be sure to use the mouse when operating ServerStart.

■ Ejecting the CD-ROM

Do not eject the ServerStart CD-ROM while ServerStart is running. If the ServerStart CD-ROM is ejected and inserted again, ServerStart starts up in multiple windows, and settings you have made can be lost.

■ Exiting ServerStart

After operation in guided or expert mode, exiting ServerStart restarts the system. Remove disks from the floppy disk and CD-ROM drives and click [OK]. When the display on the screen disappears, turn off the system.

■ License for Use of System for ServerStart

"License for Use of System for ServerStart" linked from the ServerStart startup window is a license for use of Windows PE contained in the ServerStart CD-ROM. Windows PE for starting up ServerStart can be only used for installing Windows Server 2003 or Windows 2000 Server provided under a separate legal license.

■ Setting Up the Printer

ServerStart does not support setup of printers. Perform installation after setup is completed.

2.3.5 Expansion Cards Supported by ServerStart

ServerStart supports automatic driver installation for the following expansion cards.

table: Automatic Expansion Card Driver Installation

Name	Model	Bus
Onboard FDD/IDE	-	-
Onboard LAN	-	PCI
Onboard VGA	-	PCI
RAID Card	PG-140D1	PCI
	PG-142E3	PCI
LAN Card	PG-1852	PCI
	PG-1862	PCI
	PG-1882	PCI
	PG-1892	PCI
SCSI Ctrl U160	PG-128	PCI
Fiber Channel Controller	PG-FC106	PCI

2.3.6 Cautions for Manual Installation

■ Notes on Using a RAID Card

The RAID card must be configured before the OS is installed. To check the RAID card settings, start up WebBIOS. For more details, refer to "PRIMERGY ServerBooks" supplied with the server, and "Supplement" supplied with options.

■ Free Space Required for Installation

The partition where the OS is installed must have enough free space for obtaining memory dump. For more details, refer to "5.1 Memory Dump/Paging File Setting" (→pg.134).

■ Cautions on Restarting

In the course of installation, a message appears to indicate that the setup program restarts. Wait until it restarts.
For background operations, refer to "PRIMERGY ServerBooks" supplied with the server, and "Supplement" supplied with options.

2

Checking before OS Installation

2.4 Preparation for Using ServerStart on a Client Computer

When using the preconfiguration mode for setting installation information in advance or when creating a driver disk using the FloppyBuilder function, install ServerStart on the client computer.

● System Requirements for Client Computers

Client computers must satisfy the following requirements.

Hardware	Personal computers operated with Windows NT, Windows XP Professional, or Windows 2000 Professional (A CD-ROM drive and 10MB or more of free space are required.)
Software	Microsoft® Internet Explorer 5.5 or later

2.4.1 Installing ServerStart

IMPORTANT

▶ If a different version of ServerStart has been installed, uninstall it. The FloppyBuilder function or installation wizard may not operate properly on a different version.
For details on how to uninstall ServerStart, refer to "2.4.2 Uninstalling ServerStart" (→pg.57).

1 Insert the ServerStart CD-ROM into the client computer.

The [ServerStart Launcher] window appears.

When the [ServerStart Launcher] window does not appear, execute "Launcher.exe" in the CD-ROM.
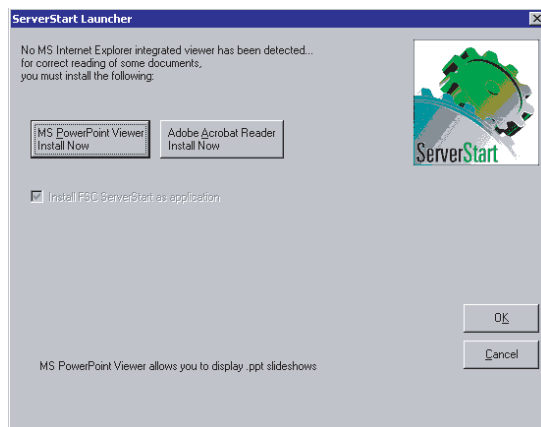
2 Click [OK].

The Windows installer starts and the setup window appears.

3 Click [Next].

The [License Agreement] window appears.

4 Select [I accept the license agreement] and click [Next].

The [User Information] window appears.

5 Enter the user information of the software and click [Next].

The [Installation Folder] window appears.

6 Specify the installation folder and click [Next]. To change the installation folder, click [Browse] and select the folder.

The [Select Features] window appears.
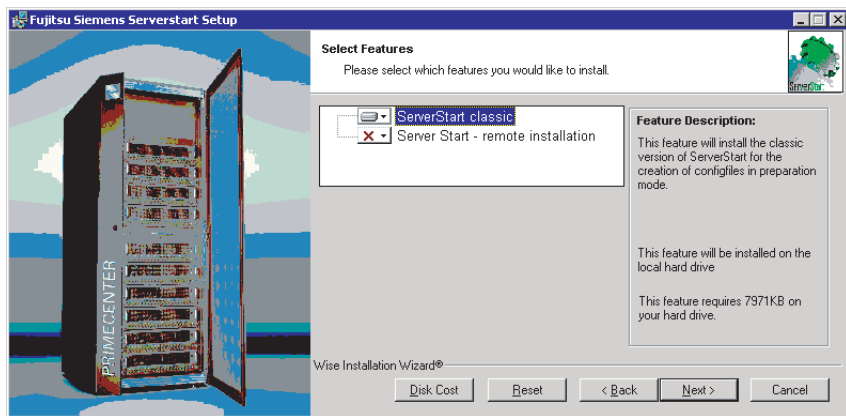
7 Set [ServerStart - remote installation] to "Disable this function" and click [Next].

The [Ready to Install the Application] window appears.
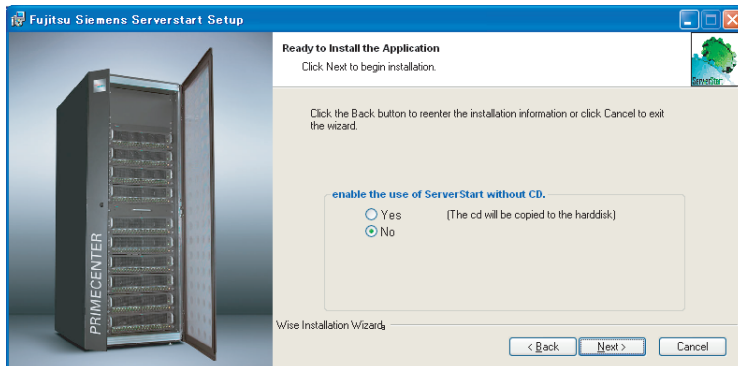
8 Specify whether or not to copy the contents of the CD.

When you select [Yes] for "enable the use of ServerStart without CD.", you can start the preconfiguration mode on the client computer without using the CD-ROM.
If you select [Yes], specify the target folder. The target folder must have enough free space to copy the contents of the CD-ROM.

IMPORTANT

▸ On WindowsNT, the CD-ROM is not copied. You must click [No]. The ServerStart CD-ROM is required to start ServerStart.

9 Click [Next].

Installation is executed.

POINT

▸ If a message prompting you to restart the system appears before or after installation, eject the CD-ROM and restart the system according to the message. When the system restarts, insert the ServerStart CD-ROM and start installation again.
If the "This program does not respond." message appears during restart operation, click [Exit] to continue the restart operation.

When the installation is completed, the completion window appears.

10 Click [Exit].

ServerStart has been installed to the client computer.

2.4.2 Uninstalling ServerStart

Perform the following procedures to uninstall ServerStart from the client computer.

1 Click [Start] → [Settings] → [Control Panel].

2 Double-click [Add or Remove Applications] ([Add or Remove Programs] on some operating systems).

3 Select [Fujitsu ServerStart] and click [Remove] (or [Modify]).
When the uninstallation is executed successfully, Fujitsu ServerStart is deleted.
If [ServerStart - remote installation] has been installed using ServerStart, "FjPXEServer" seems undeleted. Leave it and complete the operation.

○POINT

▸ On Windows 2000 Professional clients, "Add or Remove Applications" may become unable to respond during uninstallation. If this occurs, log off the system.

2

Checking before OS Installation

Chapter 3
OS Installation Using ServerStart

This chapter explains how to install the OS in the server using ServerStart.

3.1 Guided Mode

In guided mode, follow the wizard to specify hardware configuration and the OS to be installed, save the information necessary for installation in a configuration file, and install the OS.

3.1.1 Starting Up the Guided Mode

Start up the guided mode.

1 Turn on the server and insert the ServerStart CD-ROM immediately.

ServerStart starts up and a message appears prompting you to insert the ServerStart floppy disk.
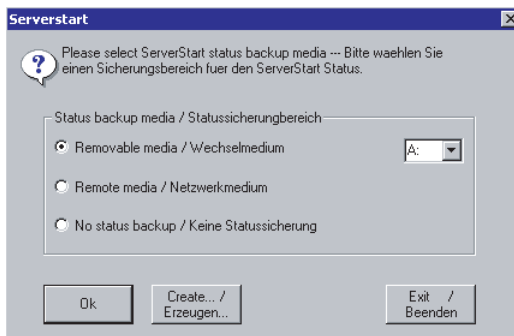
2 Insert the ServerStart floppy disk supplied with the server. Make sure that "Removable media" and "A:" are selected and click [Create].

POINT

▶ Set the ServerStart floppy disk in the write-enabled state.

The network setting window for remote installation appears.

3 Click [OK].

The [Initialization of ServerStart core running] window appears and unattended installation will be started. Depending on the hardware configuration, this process may take a few minutes.

When the process is completed, the [Create a ServerStart Floppy Disk] window appears.

4 Click [Build a ServerStart Floppy Disk].

Creation of a ServerStart floppy disk starts. When the creation is completed, the "Floppy disk has been created" message appears.

5 Click [OK].

"Please Select your keyboard" Window appears.

6 Select your keyboard language from the drop-down list and click [OK].

The subsequent start procedure may take several minutes. The [Welcome to ServerStart] window appears.

7 Click [Click here to prepare and/or initiate an operating system installation].

The [Select the operating system to be installed] window appears.
Click [Special Hints on Operating System Installation] and read the contents. Important information such as limitations on disk configuration is described.

8 Click [MS Windows Operating Systems].

The [Microsoft Windows Operating System Installation] window appears.

9 Click the OS to install.

10 Click [Prepare & initiate an unattended installation of (OS)].

The guided mode for the selected OS starts up.
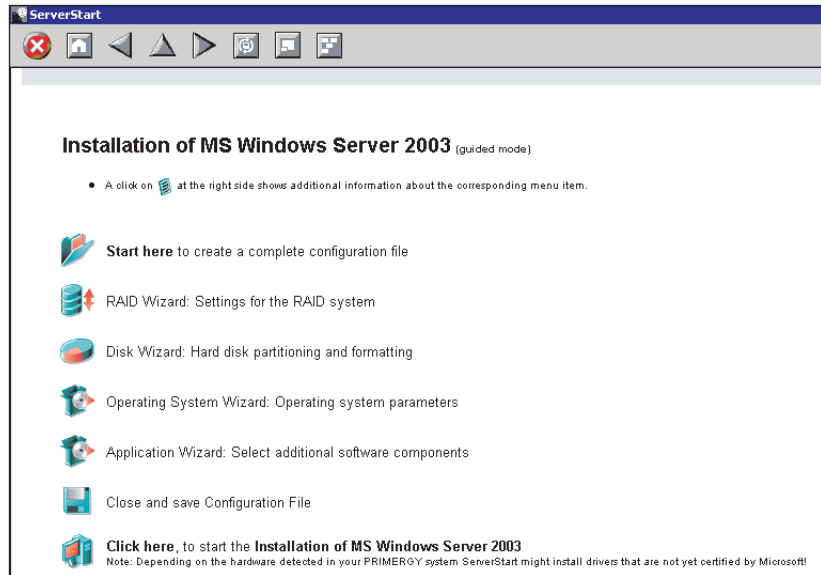
Start up the wizards to set items in the following procedures.

Exiting the wizard returns the display to the guided mode window.

3

OS Installation Using ServerStart
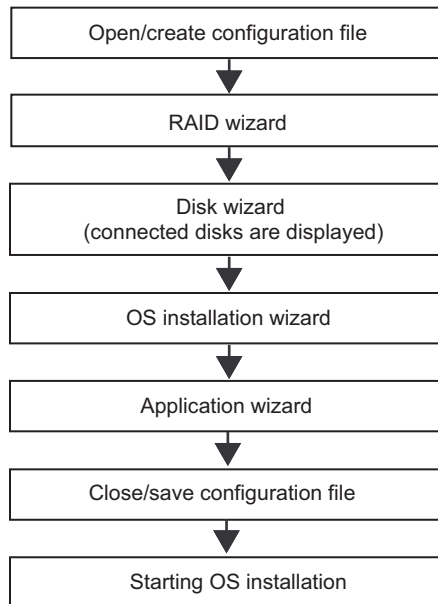
3.1.2 Open/create a Configuration File

Open a configuration file. Or create a new one.

1 Click [Start here to create a complete configuration file].

The [Open ServerStart Configuration File] window appears.

IMPORTANT
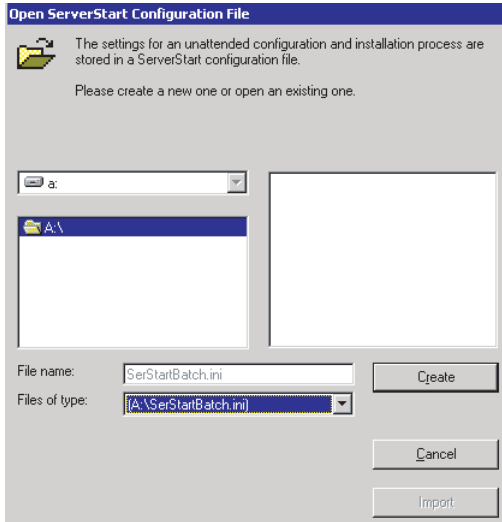
▶ Once a configuration file is opened, another file cannot be opened until you click [Close and save Configuration File].

2 Select the configuration file and click [Create].

The [Create] is changed to the [Continue].

3 Click [Continue].

The [RAID Wizard] starts up automatically (→"3.1.3 RAID Wizard" (pg.65)).

3.1.3 RAID Wizard

Configure RAID.

IMPORTANT

▶ When changing the RAID card, delete the physical pack beforehand. For details on how to delete a physical pack, refer to "PRIMERGY ServerBooks" supplied with the server, and "Supplement" supplied with options.

1 Click [RAID Wizard: Settings for the RAID system].

The [RAID Configuration] window appears.

Only array controllers already installed are displayed.

The number of hard disk units connected to the array controller is displayed.
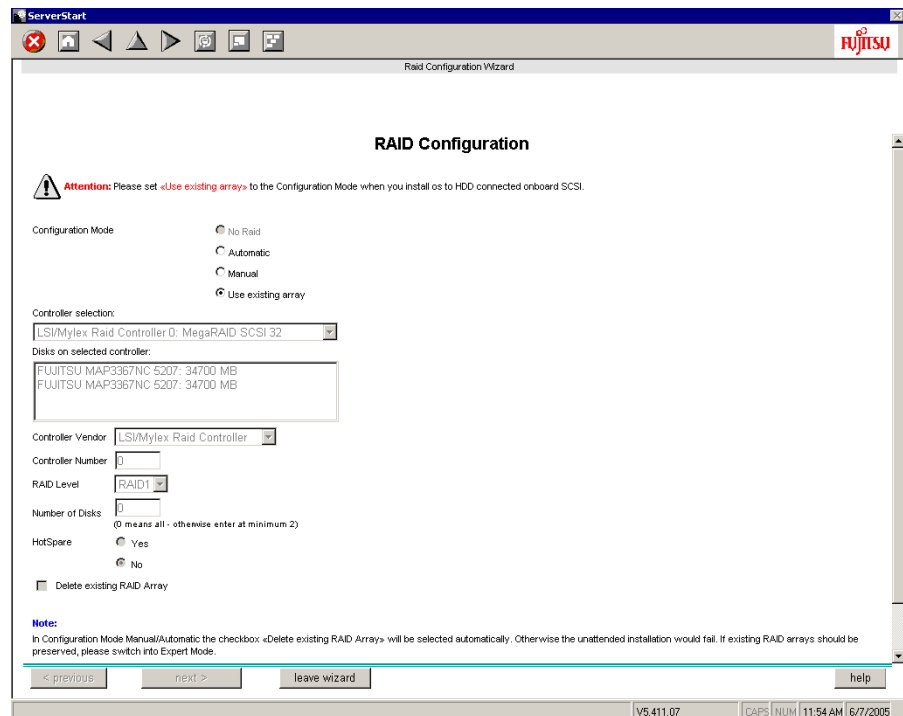
POINT

▶ When installing to the onboard SCSI, be sure to set the configuration mode to "Use existing array" before exiting the wizard.
▶ If you open a configuration file that has been created before, displayed settings may differ from the previously set values. Be sure to check the settings.
▶ One hot spare (standby disk) can be configured. However, it cannot be set for RAID0. When the hot spare disk is set to "Yes", set the number of disk units to the number of installed disk units minus 1.
   E.g.: When four hard disk units are installed, set the RAID level to "RAID5", and when the hot spare disk is set to "Yes", set the number of disk units to "3".

2 Set items and click [leave wizard].

The RAID wizard closes.

3

OS Installation Using ServerStart

3.1.4 Disk Wizard

Create and format hard disk partitions.

IMPORTANT

▶ The disk wizard starts up with the default settings. Be sure to click [MODIFY] to check the settings. Change them as necessary.

1 Click [Disk Wizard: Hard disk partitioning and formatting].

The [Disk Overview] window appears.
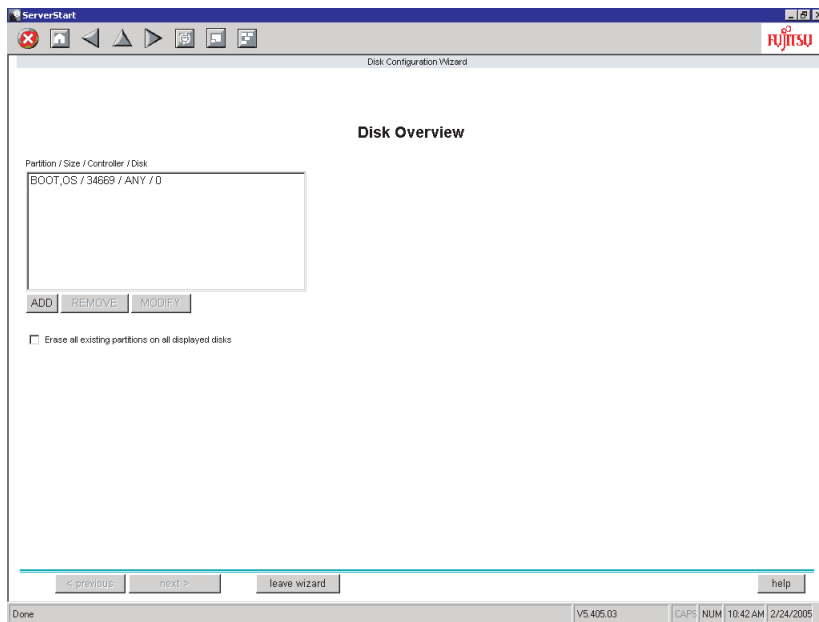
POINT

▶ When the installation disk has partitions, check [Erase all existing partitions on all displayed disks].
▶ When other disks than the installation disk have an active partition, create a partition on the disks with an active partition and check [Erase all existing partitions on all displayed disks].
▶ The default setting for the controller type is "RAID". Use this setting.

2 Add, remove, or modify partitions as necessary.

IMPORTANT

▶ Partition size of the FAT file system
When "FAT" is selected in [File system] and a value equal to or more than 4095MB or "Automatic setting" is specified in [Partition size], the size of created partitions will be 4095MB.
▶ The following limits apply to the volume label length. A volume label longer than the limit may be used. However, it can cause installation failure. Enter a volume label within the limit.
•FAT: Up to 11 characters
•NTFS: Up to 32 characters

<u>Add a partition</u>

1. Click [ADD].

   The [Disk Configuration] window appears.
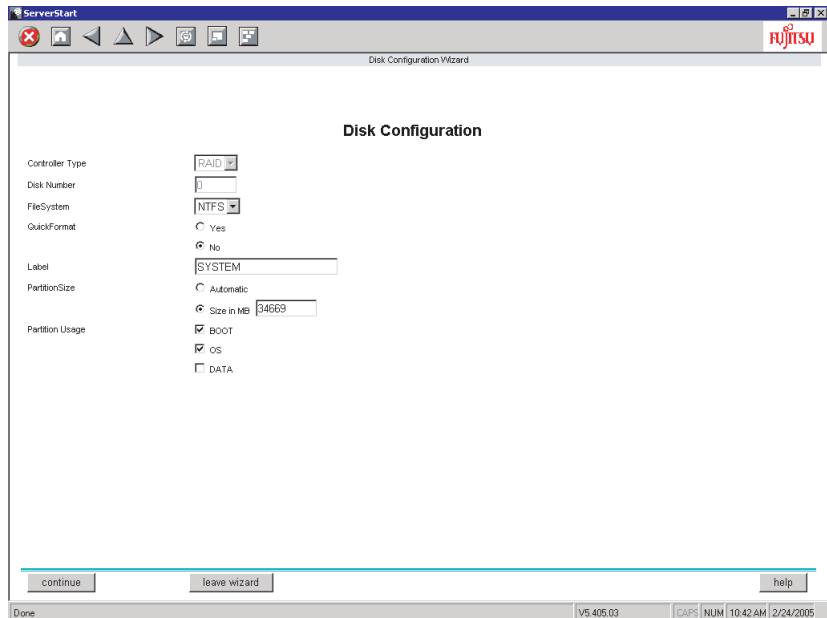
2. Set items and click [continue].

   The new partition is added to the partition list.

<u>Remove a partition</u>

1. Select the partition to remove and click [REMOVE].

   The partition is removed.

<u>Modify the partition configuration</u>

1. Select the partition to modify and click [MODIFY].

   The [Disk Configuration] window appears.

2. Change items and click [continue].

   The partition is modified.

3 Click [leave wizard] after settings are completed.

The disk wizard closes.

IMPORTANT

▶ If you are in guided mode and want to start up the disk wizard again after exiting the wizard, save the configuration file.

ServerStart may restart when the disk wizard restarts. If this occurs, open the configuration file you have saved and start setting from the item where you have discontinued. If the configuration file is not saved, the settings are lost. Start setting again from the beginning.

3

OS Installation Using ServerStart

3.1.5 OS Installation Wizard

Set computer information, user information, and the network protocol.

ServerStart can configure multiple network patterns. When configuring a domain controller, refer to "Using ServerStart to Configure the Network".

◯POINT

▸ The setup window differs depending on the OS to be installed. The following describes operations on Windows Server 2003.

1 Click [Operating System Wizard: Operating system parameters].

The [Windows Installation] window appears.
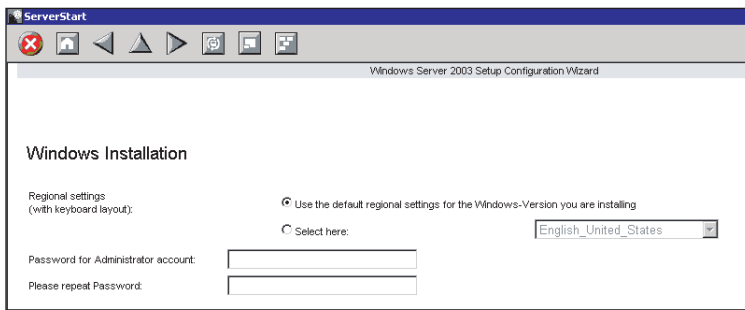
2 Enter the password in [Password for Administrator account] and [Please repeat Password] and click [Next].

◯POINT

▸ If the password differs between [Password for Administrator account] and [Please repeat Password], an error dialog window appears. Enter the password correctly.

The [Computer Identification] window appears.
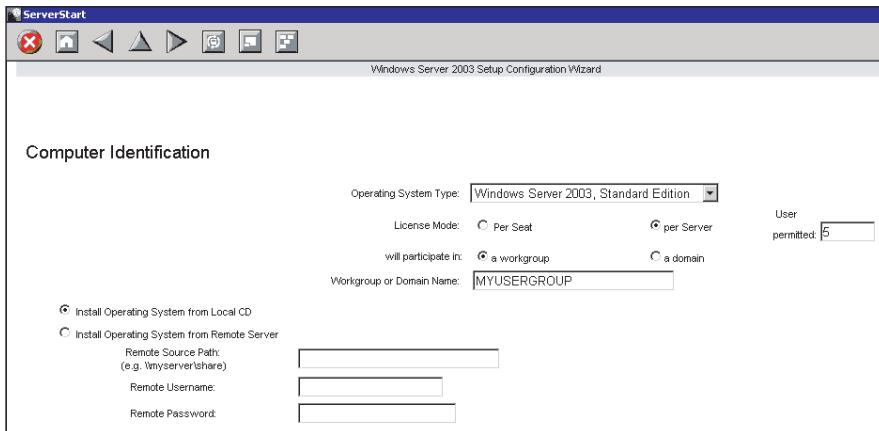
3 Set items and click [Next].
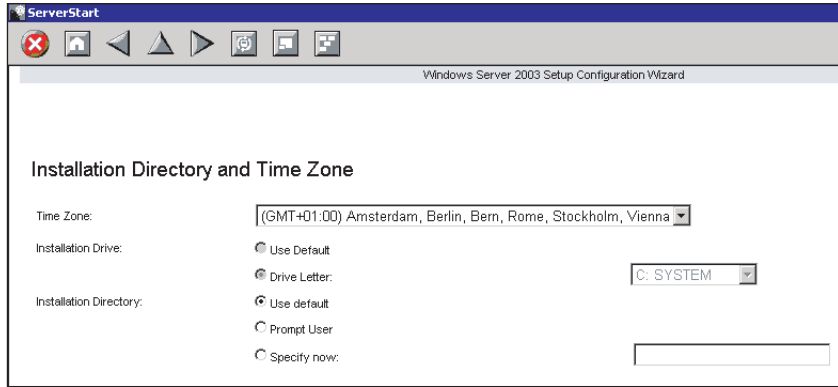
The [Installation Directory and Time Zone] window appears.

4 Set items and click [Next].
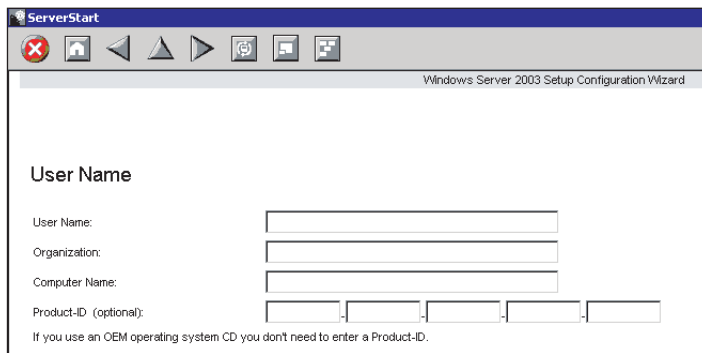
The [User Name] window appears.

5 Set items and click [Next].
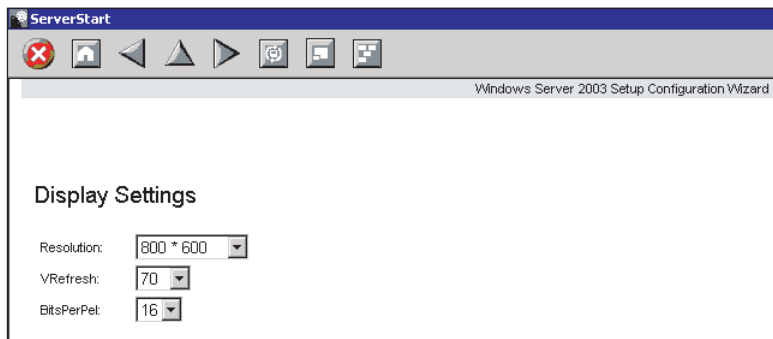
The [Display Settings] window appears.

6 Set items and click [Next].
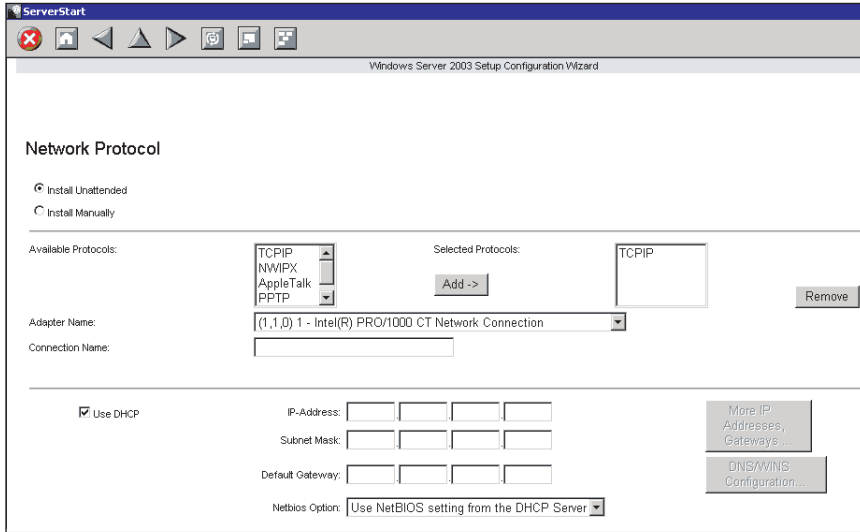
The [Network Protocol] window appears.

7 Set items and click [Next].

The [Software Components] window appears.

3

OS Installation Using ServerStart
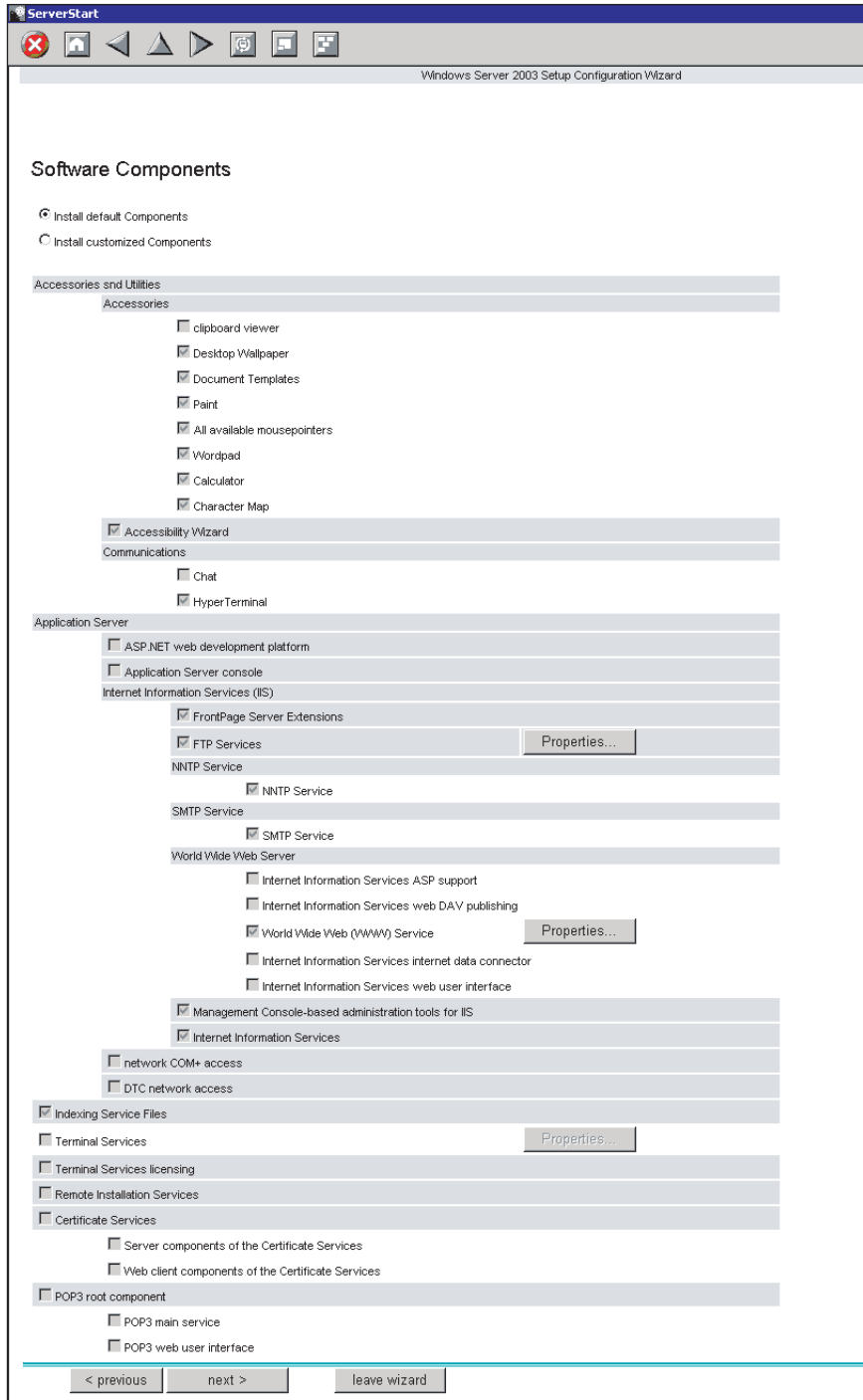
8 Set items and click [Next].

The [Services] window appears.
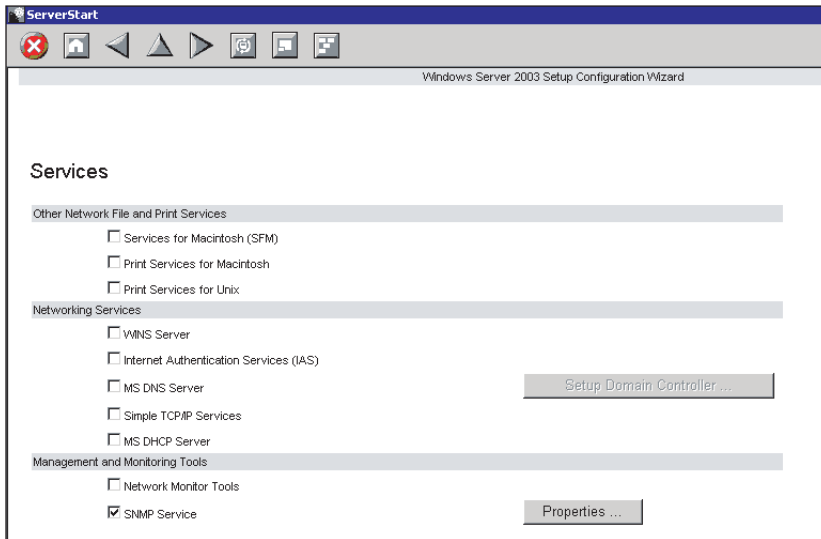
9 Set items and click [leave wizard].

The OS installation wizard closes.

3.1.6 Application Wizard

Specify installation of supplied applications such as high reliability tools.

1 Click [Application Wizard: Select additional software components].

The application wizard appears.
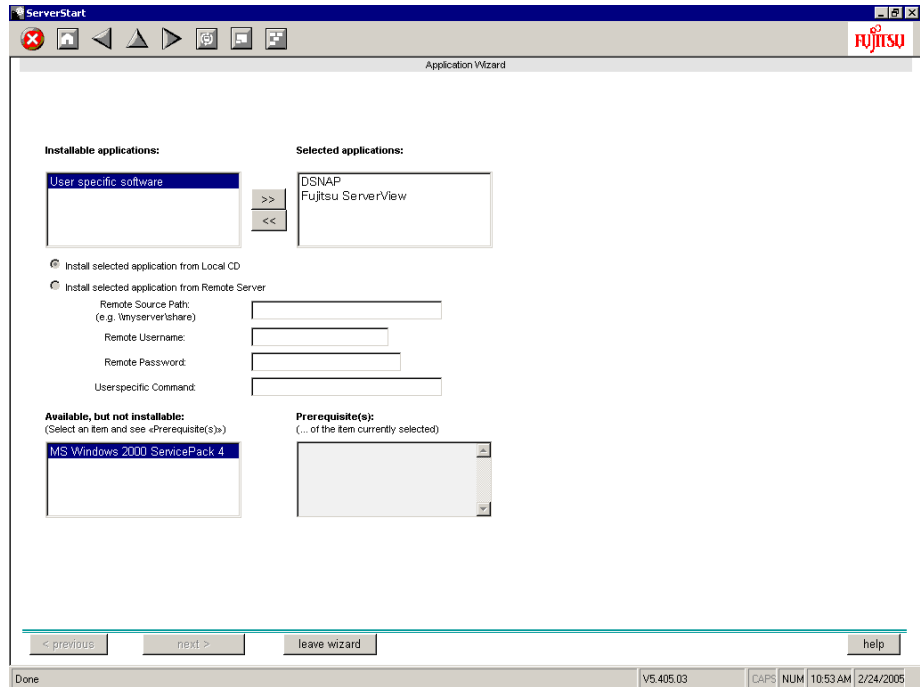
2 From the [Installable applications] list, select applications to be installed and click [>>].

Set all applications to be installed on the [Selected applications] list.

3 Click [leave wizard].

The application wizard closes.

3.1.7 Close/save the Configuration File

When settings in all wizards are completed, save the configuration file.

1 Click [Close and save Configuration File].

The [Save ServerStart Configuration File] window appears.

2 Click [Save As].

The configuration file is saved.

IMPORTANT

▶ You can specify any name for the configuration file. However, OS installation is possible only when it is saved as "SerStartBatch.ini". When installing the OS, make sure to save it as "Ser-StartBatch.ini" on the ServerStart floppy disk.

3.1.8 Start OS Installation

Install the OS to the server.
During installation, do not use the mouse or keyboard unless it is necessary for installation operations.
Otherwise, installation may fail.

1 Click [Click here, to Start the Installation of (OS)].

The [ServerStart Unattended Mode] window appears.

2 Click [Start now].

POINT
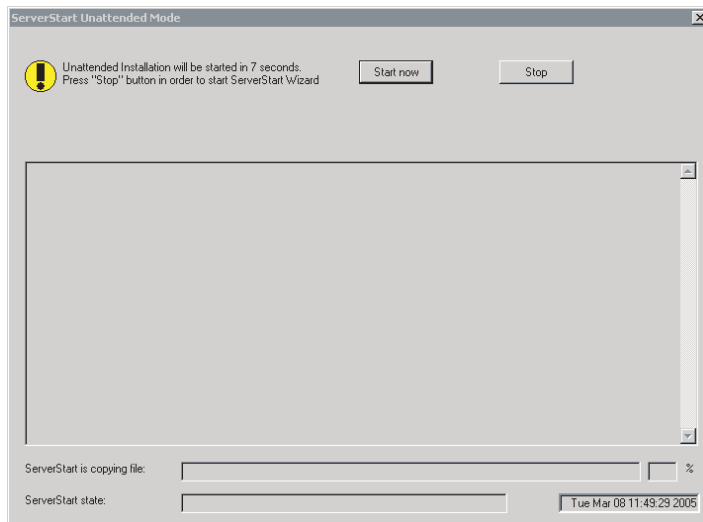
▶ Clicking [Start now] deletes all disk contents and starts installation. Click [Stop] when you do not perform installation.

After 10 seconds, installation starts automatically.

- When RAID has been configured, the system restarts.
- If a message prompting you to insert the Service Pack CD-ROM appears, insert the CD-ROM and click [OK].
  This message does not appear when Service Pack is not selected.
- If a message prompting you to insert the ServerView CD-ROM appears, insert the PRIMERGY Document and Tool CD (Disc 1) and click [OK].
  This message does not appear when ServerView will not be installed or the PRIMERGY Document and Tool CD (Disc 1) has been inserted already.
- If a message prompting you to insert the ServerStart CD-ROM appears, insert the CD-ROM and click [OK].

3 When a message prompting you to insert the OS CD-ROM appears, insert the CD-ROM and click [OK].
After files are copied, a message prompting you to insert the ServerStart CD-ROM appears.

4 Insert the ServerStart CD-ROM and click [OK].
The License Agreement window appears.

5 Click [I agree].
After files are copied, a message prompting you to eject the CD-ROM and floppy disk appears.

6 Eject the CD-ROM and floppy disk and click [OK].
Then the system is restarted.
The system continues the installation operation after restart.
OS GUI setup, LAN utility installation, Service Pack installation, and Active Directory installation are performed automatically.

7 When a confirmation message to restart appears, click [Restart].
The system restarts and installs high reliability tools.

8 When a message on installation completion appears, press any key.

9 Restart the system.
Click [Start] → [Shutdown]. Select [Restart] and click [OK].
The system restarts.

10 When the system restarts, log on to the server using the Administrator account for the local computer.

The server setup and OS installation have been completed.
Refer to "Chapter 5 Operations after OS Installation" (→pg.133) and perform necessary procedures before starting server operations.

3

OS Installation Using ServerStart

3.2 Preconfiguration Mode

In preconfiguration mode, set and save the information necessary for installation in a configuration file on a client computer (with a CD-ROM drive and 10MB or more of free space). Set the saved configuration file on the server for installation.

POINT

▶ If ServerStart is not installed in the client computer where the preconfiguration mode is executed, refer to "2.4 Preparation for Using ServerStart on a Client Computer" (→pg.54) to install ServerStart. If a different version of ServerStart has been installed, uninstall it and install the proper version. For details on how to uninstall ServerStart, refer to "2.4.2 Uninstalling ServerStart" (→pg.57).

IMPORTANT

▶ If ServerStart is started up on a computer where a different version of ServerStart is installed, the installation wizard may not operate properly. Make sure to uninstall a different version of ServerStart.

3.2.1 Starting Up the Preconfiguration Mode

Start up the preconfiguration mode.

1 Start up ServerStart.

If ServerStart has already been started, it is not necessary to start it up again. If it has not, start it up according to the following procedures:

For Windows 2000 Professional/Windows XP Professional, and if the contents of the ServerStart CD-ROM has been copied to the computer

1. Click [Start] → [Programs] → [Fujitsu ServerStart] → [ServerStart].

   ServerStart starts up and the [Welcome to ServerStart] window appears.

For Windows NT, or if the ServerStart CD-ROM has not been copied to the computer

1. Insert the ServerStart CD-ROM into the client computer's CD-ROM drive.

   ServerStart starts up and the [Welcome to ServerStart] window appears.
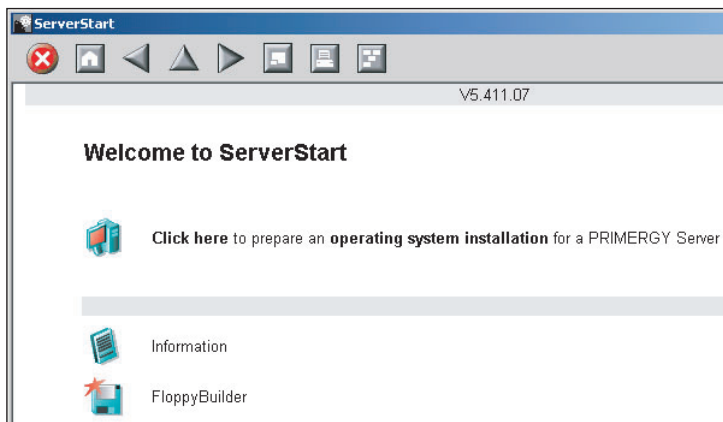
2 Click [FloppyBuilder].

The [ServerStart FloppyBuilder] window appears.
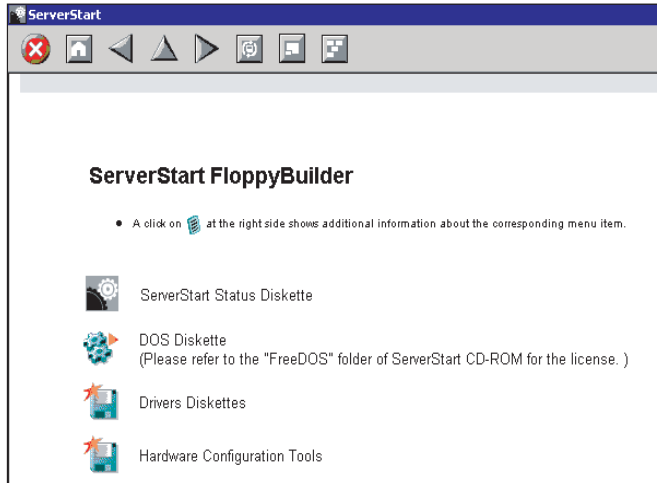
3 Click [ServerStart Status Diskette].

A message prompting you to insert the floppy disk appears.

4 Insert the ServerStart floppy disk supplied with the server and click [OK].

POINT

> Set the ServerStart floppy disk in the write-enabled state.

Creation of a ServerStart floppy disk starts. When the creation is completed, the "Floppy disk has been created." message appears.

5 Click [OK].

6 Click [(HOME)] on the tool bar.

The display returns to the [Welcome to ServerStart] window.

7 Click [Click here to prepare an operating system installation for a PRIMERGY Server].

The [Prepare the installation of an operating system for PRIMERGY Servers] window.

IMPORTANT

> Before starting installation, click [Cautions for Installation] and read the contents. Important information such as limitations on disk configuration is described.

8 Click [Creation of a ServerStart Configuration file for the installation of an Microsoft Windows Operating System].

The [Microsoft Windows Operating System Installation] window appears.

3

OS Installation Using ServerStart

9   Select the OS to be installed.

The [Preparing the Installation] window appears.
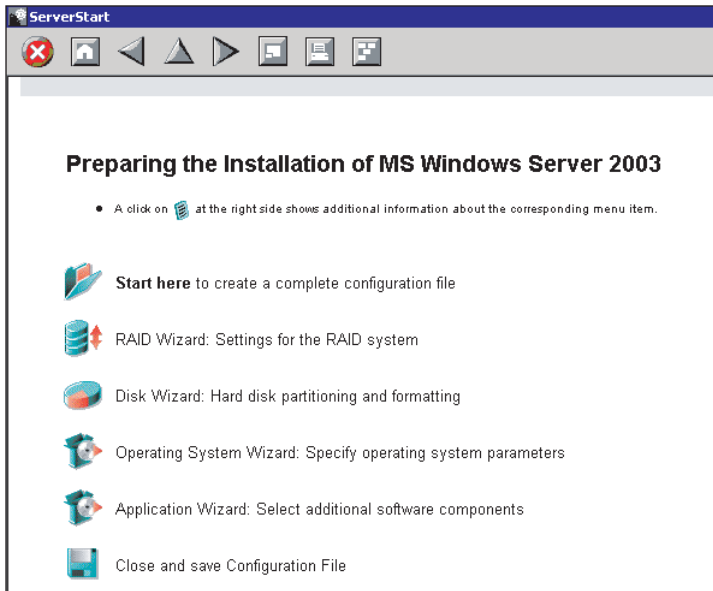
3.2.2 Configure Settings in Wizards

Click the wizards to set items in the following procedures. For setting procedures, refer to description on guided mode wizards ("3.1.2 Open/create a Configuration File" (→pg.64) to "3.1.6 Application Wizard" (→pg.73)).

Exiting a wizard returns the display to the preconfiguration mode window.

```
┌─────────────────────────────────────┐
│   Open/create configuration file     │
└─────────────────────────────────────┘
                  ↓
┌─────────────────────────────────────┐
│             RAID wizard              │
└─────────────────────────────────────┘
                  ↓
┌─────────────────────────────────────┐
│             Disk wizard              │
└─────────────────────────────────────┘
                  ↓
┌─────────────────────────────────────┐
│         OS installation wizard       │
└─────────────────────────────────────┘
                  ↓
┌─────────────────────────────────────┐
│          Application wizard          │
└─────────────────────────────────────┘
                  ↓
┌─────────────────────────────────────┐
│      Close/save configuration file   │
└─────────────────────────────────────┘
                  ↓
┌─────────────────────────────────────┐
│    Activate ServerStart in the server│
└─────────────────────────────────────┘
                  ↓
┌─────────────────────────────────────┐
│         Starting OS installation     │
└─────────────────────────────────────┘
```

3

OS Installation Using ServerStart
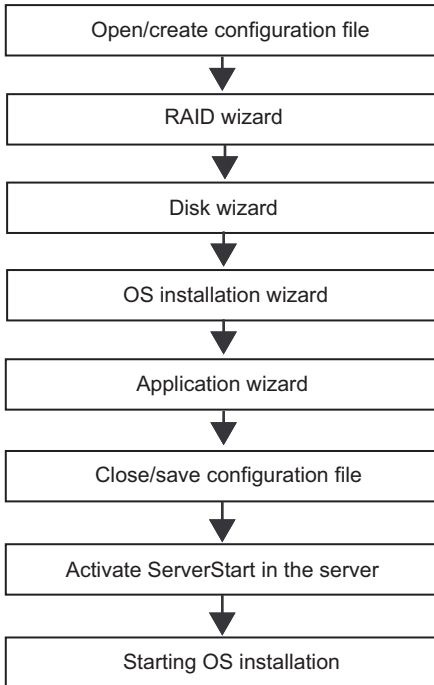
3.2.3 Close/save the Configuration File

When settings in all wizards are completed, save the configuration file.

1 Click [Close and save Configuration File].

The [Save ServerStart Configuration File] window appears.

2 Click [Save As].

The [ServerStart Remote Installation IP Settings] window appears.

3 Set items when performing remote installation.

4 Click [Set].

The configuration file is saved.

IMPORTANT

▸ You can specify any name for the configuration file. However, OS installation is possible only when it is saved as "SerStartBatch.ini". When installing the OS, make sure to save it as "SerStartBatch.ini" on the ServerStart floppy disk.

3.2.4 Starting OS Installation

Install the OS to the server using the created configuration file.

During installation, do not use the mouse or keyboard unless it is necessary for installation operations.

Otherwise, installation may fail.

1 Turn on the server and insert the ServerStart CD-ROM immediately.

A message prompting you to insert the ServerStart floppy disk appears.

2 Insert the ServerStart floppy disk containing the created configuration file and click [OK].

> **IMPORTANT**
>
> ▶ Set the ServerStart floppy disk in the write-enabled state. If it is write protected, installation will fail.

The [Initializing ServerStart] window appears and the ServerStart initialization process starts. Depending on the hardware configuration, this process may take a few minutes. When initialization is completed, the [ServerStart Unattended Mode] window appears.
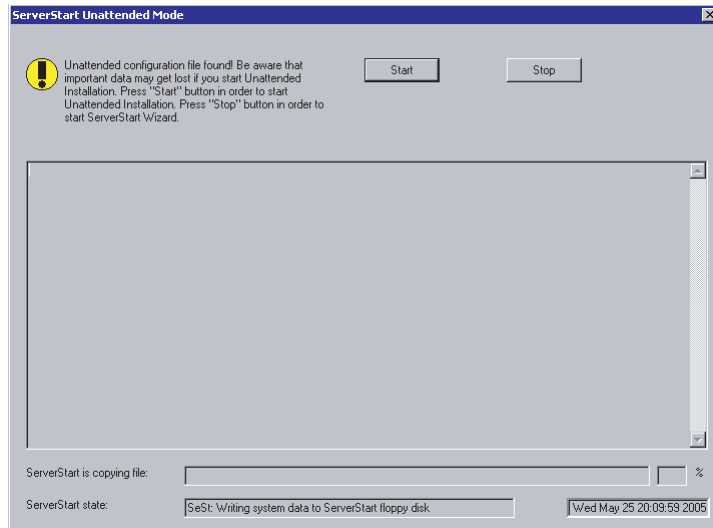
3 Click [Start].

Installation starts.

- When RAID has been configured, the system restarts.
- If a message prompting you to insert the Service Pack CD-ROM appears, insert the CD-ROM and click [OK].

  This message does not appear when Service Pack is not selected.
- If a message prompting you to insert the ServerView CD-ROM appears, insert the PRIMERGY Document and Tool CD (Disc 1) and click [OK]. This message does not appear when ServerView will not be installed or the PRIMERGY Document and Tool CD (Disc 1) has been inserted already.

• If a message prompting you to insert the ServerStart CD-ROM appears, insert the CD-ROM and click [OK].

4 When a message prompting you to insert the OS CD-ROM appears, insert the CD-ROM and click [OK].

After files are copied, a message prompting you to insert the ServerStart CD-ROM appears.

5 Insert the ServerStart CD-ROM and click [OK].

The License Agreement window appears.

6 Click [I agree].

After files are copied, a message prompting you to eject the CD-ROM and floppy disk appears.

7 Eject the CD-ROM and floppy disk and click [OK].

The system restarts. The system continues the installation operation after restart. OS GUI setup, LAN utility installation, Service Pack installation, and Active Directory installation are performed automatically.

8 When a confirmation message appears on restart, click [Restart].

The system restarts and installs high reliability tools.

9 When a message on installation completion appears, press any key.

10 Restart the system.

Click [Start] → [Shutdown]. Select [Restart] and click [OK]. The system restarts.

11 When the system restarts, log on to the server using the Administrator account for the local computer.

The server setup and OS installation have been completed.
Refer to "Chapter 5 Operations after OS Installation" (→pg.133) and perform necessary procedures before starting server operations.

3.3 Expert Mode

In expert mode, start up Disk Manager, format the installation partition, and install the OS.

Use the expert mode only when you want to perform installation while maintaining the existing partitions. Use the guided mode for normal installation.

3.3.1 Starting Up the Expert Mode

Start up the expert mode.

1 Turn on the server and insert the ServerStart CD-ROM immediately.
ServerStart starts up and a message appears prompting you to insert the ServerStart floppy disk.

2 Insert the ServerStart floppy disk supplied with the server. Make sure that "Removable media" and "A:" are selected and click [Create].
The network setting window for remote installation appears.

POINT
▶ Set the ServerStart floppy disk in the write-enabled state.

3 Click [OK].
The [Initialization of ServerStart core running] window appears and unattended installation will be started. Depending on the hardware configuration, this process may take a few minutes. When the process is completed, the [Create a ServerStart Floppy Disk] window appears.

4 Click [Build a ServerStart Floppy Disk].
Creation of a ServerStart floppy disk starts. When the creation is completed, the "Floppy disk has been created." message appears.

5 Click [OK].
"Please Select your keyboard" window appears.

6 Select your keyboard language from the drop-down list and click [OK].
The subsequent start procedure may take several minutes. The [Welcome to ServerStart] window appears.

7 Click [Click here to prepare and/or initiate an operating system installation].
The [Select the operating system to be installed] window appears.
Click [Special Hints on Operating System Installation] and read the contents. Important information such as limitations on disk configuration is described.

8 Click [MS Windows Operating Systems].
The [Microsoft Windows Operating System Installation] window appears.

3

OS Installation Using ServerStart

9 Select the OS to install.

10 Click [Install MS Windows Server 2003 interactively (expertise required)].

The expert mode starts.
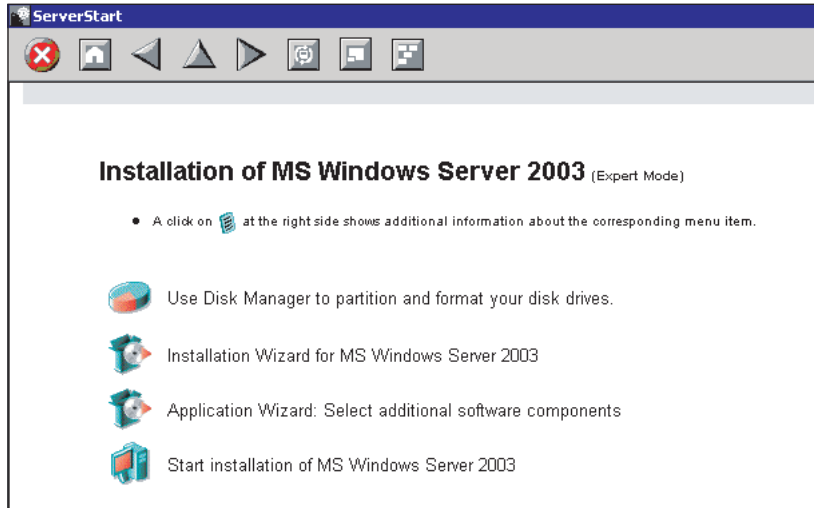
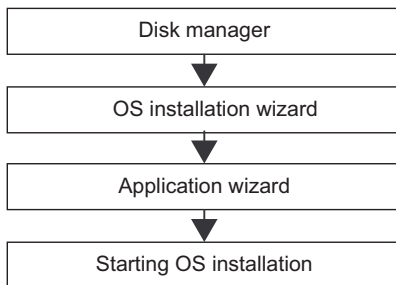Start up the configuration tools to set items in the following procedures. Exiting a tool returns to the display to the expert mode window.

3.3.2 Disk Manager

Start up Disk Manager and format the installation partition.

1 Click [Use Disk Manager to partition and format your disk drives].

Disk Manager starts up.

```
Disk Manager                                                    ×
File  Disk  Partition  View  Help
──── Root
    ──── 0 :0 :0  1020304    FUJITSU MAP3367NC
              ──── PARTITION_IFS        C:\   NTFS  14998 MB   SYSTEM
              ──── PARTITION_IFS        D:\   NTFS  19854 MB   DATA
```
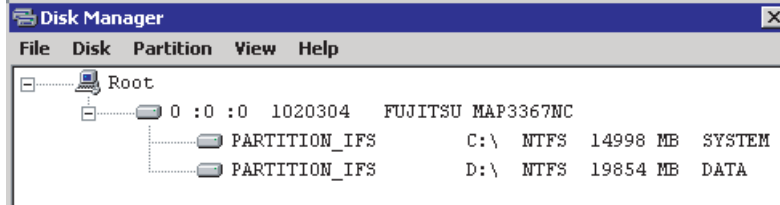
2 Format the OS installation partition. Select the OS installation partition and click the [Partition] menu → [Format].

The [Format Partition] window appears.

```
Format Partition                                    ×

  Drive Letter  [D  ▼]              Quick Format  ☑

  File System Type [NTFS   ▼]       Active Partition ☑

  Volume Label  [            ]

          [   Format   ]      [   Cancel   ]
```
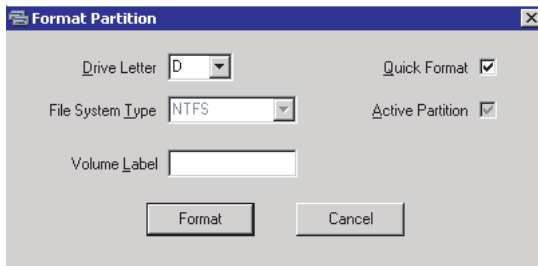
IMPORTANT

▶ Be sure to specify the active partition on drive C.
▶ Partitions equal to or larger than 4096MB cannot be FAT formatted.

3 Set items and click [Format].

The partition is formatted.

4 When the formatting is completed, click the [File] menu → [Exit].

Disk Manager closes and the display returns to the expert mode window.

3

OS Installation Using ServerStart

3.3.3 OS Installation Wizard

Set computer information, user information, and the network protocol.
ServerStart can configure multiple network patterns. When configuring a domain controller, refer to
"Using ServerStart to Configure the Network".

⚲POINT

▶ The setting window differs depending on the OS to be installed. The following describes operations on
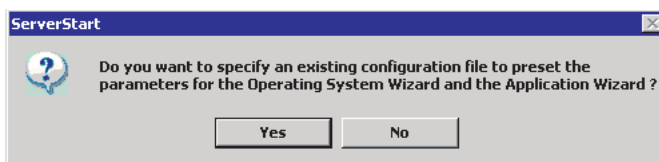Windows Server 2003.

1 Click [Installation Wizard for MS Windows Server 2003].

A message prompting you to specify the configuration file appears.

2 Click [No].

The [Windows Installation] window appears.

3 Enter the password in [Password for Administrator account] and [Please repeat
Password] and click [Next].

⚲POINT

▶ If the password differs between [Password for Administrator account] and [Please repeat Pass-
word], an error dialog window appears. Enter the password correctly.

The [Computer Identification] window appears.

4 Set items and click [Next].

The [Installation Directory and Time Zone] window appears.

5 Set items and click [Next].

The [User Name] window appears.

6 Set items and click [Next].

The [Display Settings] window appears.

7 Set items and click [Next].

The [Network Protocol] window appears.

8 Set items and click [Next].

The [Software Components] window appears.

9 Set items and click [Next].

The [Services] window appears.

10 Set items and click [leave wizard].

The display returns to the expert mode window.

3.3.4 Application Wizard

Specify installation of supplied applications such as high reliability tools.
For details on the application wizard, refer to "3.1.6 Application Wizard" (→pg.73).

3.3.5 Start OS Installation

Install the OS to the server.

✍IMPORTANT

▶ When the installation partition is not empty, a confirmation message appears. If it does not matter, click [OK] to continue the installation procedure.
▶ If an incorrect setting (such as the CD key) is found during installation, an error window will appear. Enter the correct value in the window to continue the installation procedure. However, corrections made here are not reflected to the configuration file.

1 Click [Click here, to Start the Installation of (OS)].

A confirmation window asking whether you want to save the current settings appears.

2 Click [Yes].

The following window appears.
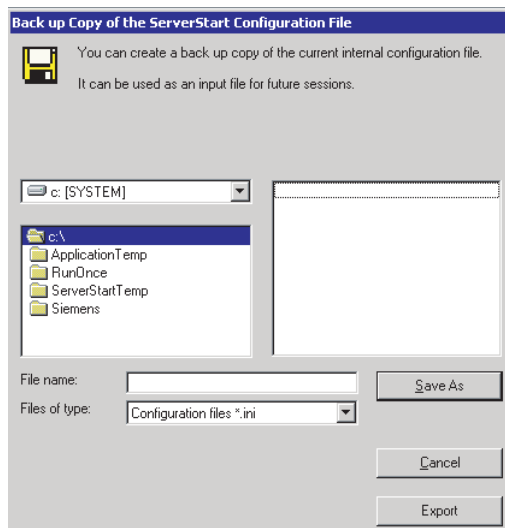
3   Enter the file name and click [Save As].

Installation starts automatically.

- If a message prompting you to insert the Service Pack CD-ROM appears, insert the CD-ROM and click [OK].
  This message does not appear when Service Pack is not selected.
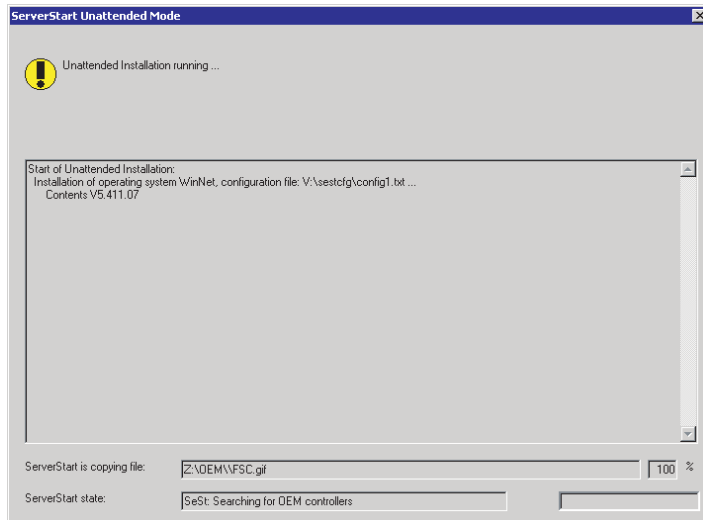- If a message prompting you to insert the ServerView CD-ROM appears, insert the PRIMERGY Document and Tool CD (Disc 1) and click [OK]. This message does not appear when ServerView will not be installed or the PRIMERGY Document and Tool CD (Disc 1) has been inserted already.
- If a message prompting you to insert the ServerStart CD-ROM appears, insert the CD-ROM and click [OK].

4   When a message prompting you to insert the OS CD-ROM appears, insert the CD-ROM and click [OK].

After files are copied, a message prompting you to insert the ServerStart CD-ROM appears.

5   Insert the ServerStart CD-ROM and click [OK].

The License Agreement window appears.

6   Click [I Agree].

After files are copied, a message prompting you to eject the CD-ROM and floppy disk appears.

7   Eject the CD-ROM and floppy disk and click [OK].

Then the system is restarted.
The system continues the installation operation after restart.
OS GUI setup, LAN utility installation, Service Pack installation, and Active Directory installation are performed automatically.

8   When a confirmation message to restart appears, click [Restart].

The system restarts and installs high reliability tools.

9 When a message on installation completion appears, press any key.

10 Restart the system.

Click [Start] → [Shutdown]. Select [Restart] and click [OK].
The system restarts.

11 When the system restarts, log on to the server using the Administrator account for the local computer.

The server setup and OS installation have been completed.
Refer to "Chapter 5 Operations after OS Installation" (→pg.133) and perform necessary procedures before starting server operations.

3.4 Remote Installation

ServerStart supports remote installation.

IMPORTANT

▶ Before performing remote installation, be sure to read "Cautions for Remote Installation" in the online help.

3.4.1 Overview of Remote Installation

Remote installation is a method to save resources necessary for installation, such as the OS and Service Pack, in a different server on the network and install them via the network.
If a remote resource server is configured, you can install the same resources to multiple servers. This method is useful in configuring multiple servers.

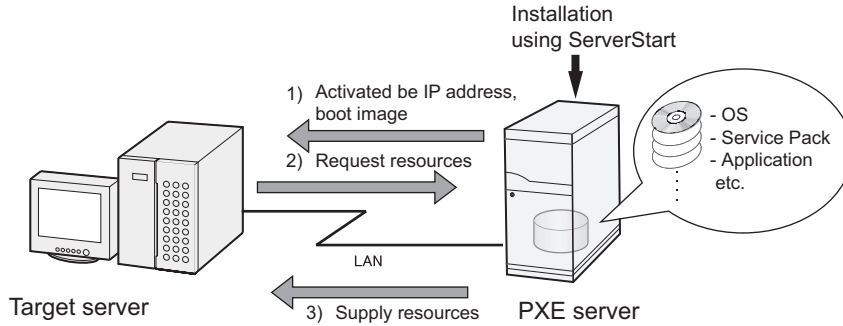### ● Target Server and Remote Resource Server/PXE Server

A server to which resources are installed is called a "target server". A server that stores resources necessary for remote installation is called a "remote resource server". A server that can start up a target server through network startup (PXE) is called a "PXE server".

■ Installation Method

Remote installation uses a PXE or a remote resource server.
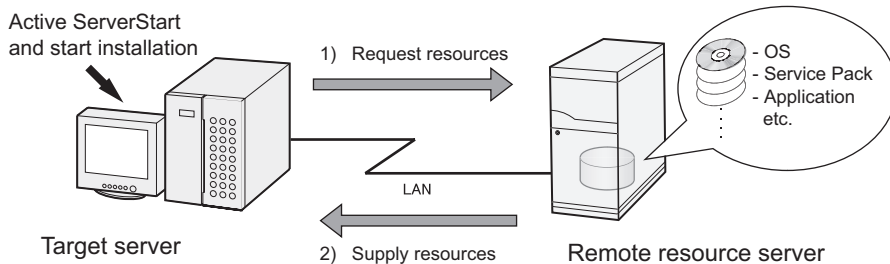
● Remote Installation Using a PXE Server

In remote installation using a PXE server, the network startup (PXE) function of the PXE server starts up the target server and performs installation in preconfiguration mode. This method is used when the target server does not have a CD-ROM or floppy disk drive.

In addition to the PXE server, a "remote resource server" that stores remote resources and a "DHCP server" that performs the DHCP service are required for remote installation using a PXE server. When you have only one server, store remote resources on the PXE server to install the DHCP service. When you have multiple servers, select one for performing the DHCP service and another for storing remote resources.

● Remote Installation Using a Remote Resource Server

In remote installation using a remote resource server, ServerStart starts up on the target server. Procedures for starting installation are the same as those in normal installation (preconfiguration, guided, and expert modes). Once installation started, resources necessary for installation are provided from the remote resource server. Thus, procedures such as inserting a CR-ROM are not necessary.

3.4.2 System Requirements for Remote Resource/PXE Servers

Because remote installation is performed via a network, the environment must have at least one Windows server and a local area network.

In addition, the following environment is required.

■ Remote Resource/PXE Server Requirements

table: System Requirements for Remote Resource/PXE Servers

	PXE server	Remote resource server
OS	Windows 2000 Server SP2 or later	Windows Server 2003 Windows 2000 Server Windows NT Server 4.0
Memory	256MB or more	256MB or more
Operating environment	• DHCP server function (required on the same network) • File sharing function (required)	• File sharing function (required)

IMPORTANT

Notes on the PXE server

  ▶ Check that no other PXE server exists on the same LAN.
  ▶ Servers installed with software with the PXE function such as SystemcastWizard/SystemcastWizard Professional, Quick Recovery Manager, or the Microsoft RIS function cannot be used as a PXE server.

■ Checking Server Free Space

Decide a server to use as a remote resource server / PXE server and check it for enough free space for storing resources.

● Checking the Number of Servers

• When you have only one server, use it as the remote resource server, PXE server, and DHCP service server. Check it for the required amount of free space.
• When you have multiple servers
  • Check if a server performing the DHCP service exists. If not, decide a server for the DHCP service.
  • When there are multiple resources, they can be divided and stored in multiple remote resource servers.

● **Checking Server Free Space**

The following table shows the amount of free space required for each installation resource.
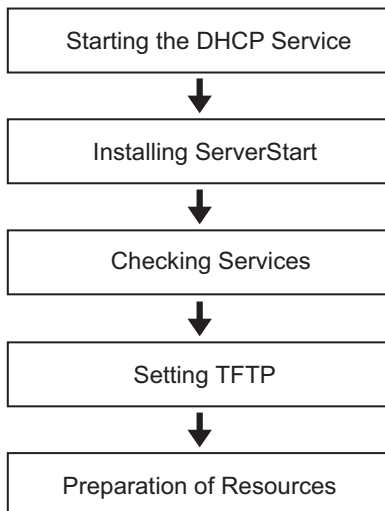
table: Free Space Required for Resources

Resource	Required free space
ServerStart	About 650MB
Windows Server 2003	644MB
Windows 2000 Server	472MB
Windows 2000 Service Pack 4	433MB

Calculate the total resource size. Check that the remote resource server / PXE server has enough free space (free space greater than the space required for the resources). When the amount of free space is insufficient, you must use more remote resource servers.

3.4.3 Preparation of the PXE Server (When the PXE Server is Used)

When performing remote installation using a PXE server, preparatory procedures, such as installing ServerStart, are required.
Perform the following procedures to prepare the PXE server.

```
Starting the DHCP Service
        ↓
Installing ServerStart
        ↓
Checking Services
        ↓
Setting TFTP
        ↓
Preparation of Resources
```

■ Starting the DHCP Service

Check that the DHCP service is running on the same network.
If the DHCP service function is not installed, perform the following procedures (for Windows Server 2003) to install the DHCP service.

1 Click [Start] → [Control Panel] → [Add or Remove Applications].

2 Click [Add or Remove Windows Components]. Click the [Dynamic Host
Configuration Protocol (DHCP)] service from [Network Services].

The DHCP service is installed.

3 Create and configure a DHCP scope so that the IP address can be distributed.
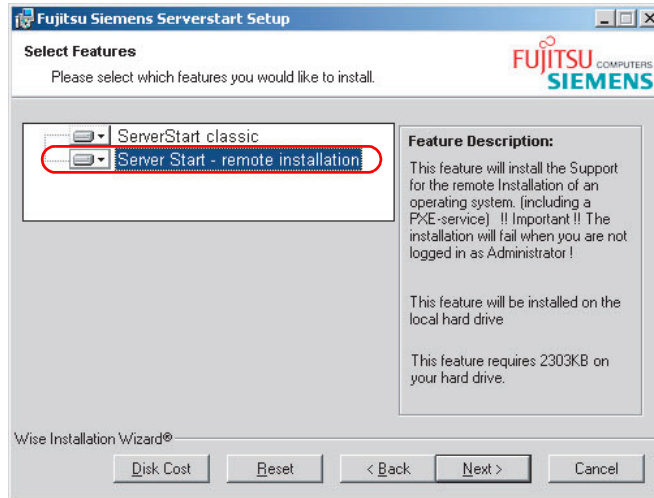
■ Installing ServerStart

1 Insert the ServerStart CD-ROM into the PXE server.

The [ServerStart Launcher] window appears.

When the [ServerStart Launcher] window does not appear, execute "Launcher.exe" in the CD-
ROM.
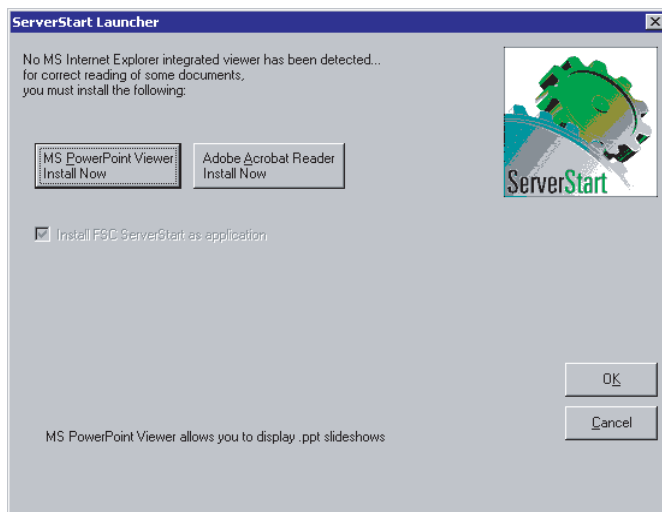
2 Click [OK].

The Windows installer starts and the Setup window appears.

3 Click [Next].

The [License Agreement] window appears.

4 Select [I accept the license agreement] and click [Next].

The [User Information] window appears.

5 Enter the user information of the software and click [Next].

The [Installation Folder] window appears.
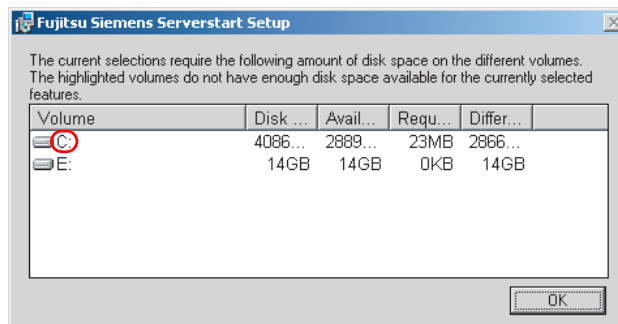
6 Select the installation folder and click [Next].

To change the installation folder, click [Browse] and select the folder.

The [Select Features] window appears.

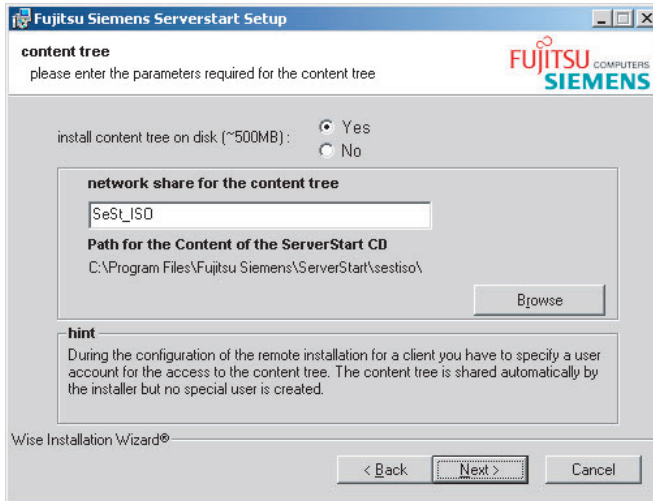Configure [ServerStart - remote installation] so that it will be installed.

Clicking [Disk Cost] displays the following widow where you can check the amount of free space.

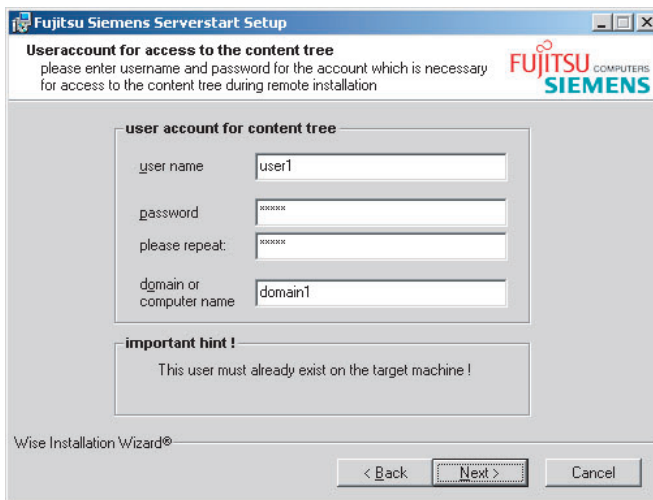OS Installation Using ServerStart

3

7 Click [Next].

The [contents tree] window appears.

8 Configure the ServerStart image necessary for network startup (PXE) and click [Next].

The [Useraccount for access to the content tree] window appears.

9 Specify the user account for the content tree and click [Next].

The [PXE server] window appears.
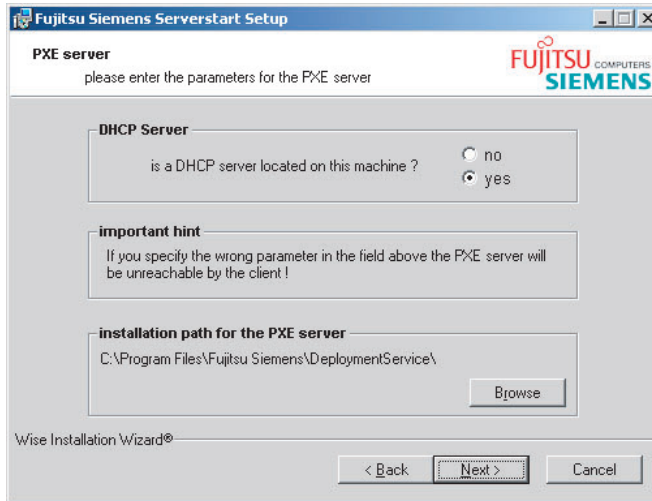
10 Select [yes] when the PXE server performs the DHCP service or select [no] when the DHCP and PXE servers are configured separately. Then click [Next].

The [PXE server] window appears.
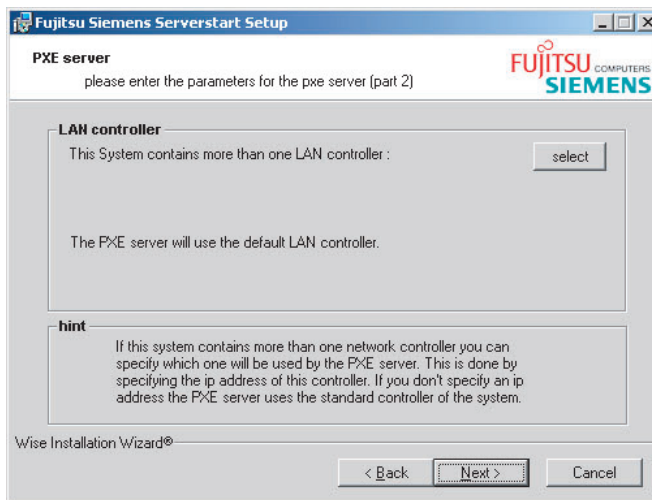
11 When there are multiple LAN ports, click [select], select the LAN controller on the LAN controller selection screen, and click [Next].

The [Important hint] window appears.

12 Click [Next].

The [Ready to Install the Application] window appears.

3

OS Installation Using ServerStart

13 Click [show Readme file].

The [Readme] window appears. Read the text. When you finish, click [✕] in the upper-right corner of the window to close the [Readme] window.

14 Click [Next].

The image file is copied.

The image file copying process takes about 10 to 20 minutes.

The installation completes when the installation completion window appears.

15 Click [Start] → [Shutdown]. Select [Restart] and click [OK].
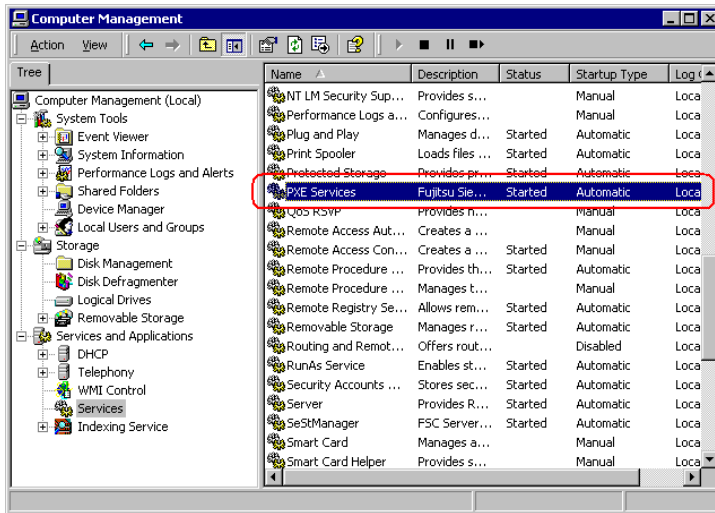
The system restarts.

■ Checking Services

● Checking [PXE Services] and [TFTP Service]

1 Right-click the [My Computer] icon and click [Manage].

2 Select [Services] from [Services and Applications].

On the Services list, check that PXE Services and TFTP Service have been installed and started.

● **Checking the DHCP Service**

Perform the following check only when the PXE server performs the DHCP service.

1 On the PXE server, click [Start] → [Programs] → [Administrative Tools] → [DHCP] to start up the DHCP administrative tool.

2 Click [Server Options] and check that the "060 ClassID" server option is added.
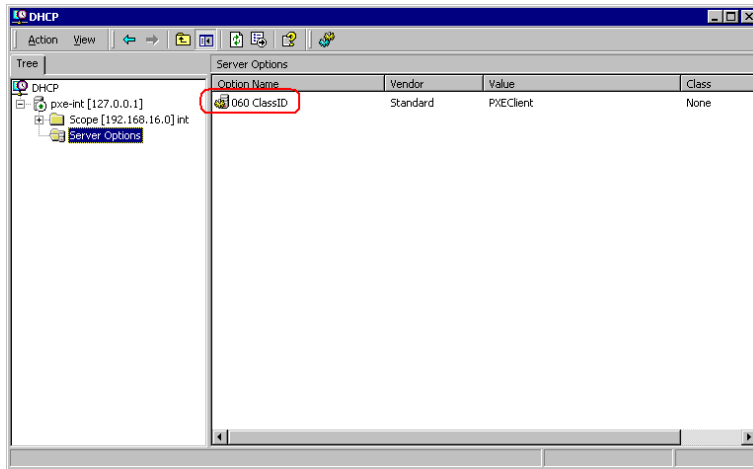
■ **Setting TFTP**

TFTP is an FTP service function that requires no authentication. In remote installation, the TFTP service is used to distribute the boot image required for startup. For the TFTP path, set the appropriate access rights for the Guest account to obtain the image via network startup (PXE).

1 Click [Start] → [Programs] → [Accessories] → [Windows Explorer] and move to the TFTP path (the default is C:\Program Files\Fujitsu Siemens\DeploymentService\tftp).

2 Right-click the TFTP folder and click [Properties].

3 Click the [Security] tab, add the Guest account, and set the "Read and execute", "View folder contents list", and "Read" access permissions.
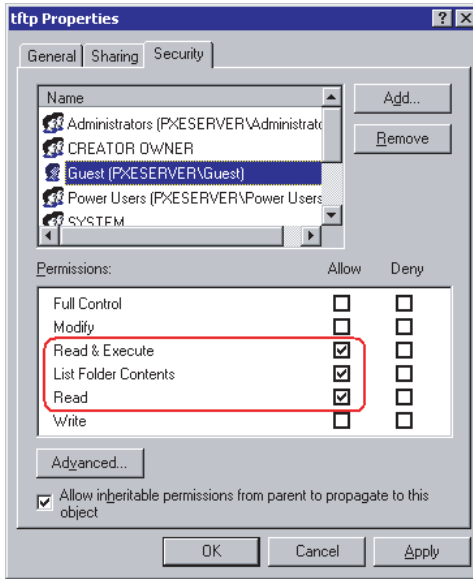
The preparation of the PXE server has been completed.
Then, perform "3.4.4 Preparation of Remote Resources" (→pg.100).

3.4.4 Preparation of Remote Resources

Store resources to be installed on the remote resource server (PXE server) before starting installation.

IMPORTANT

▶ For sharing resources, log on to the remote resource/PXE server with the Administrator account.

1 Prepare resources required for installation.
- CD-ROM for the OS to be installed
- Service Pack CD-ROM for the OS to be installed
- ServerStart floppy disk
- PRIMERGY Document & Tool CD (Disc 1) (for installing ServerView)
- Others

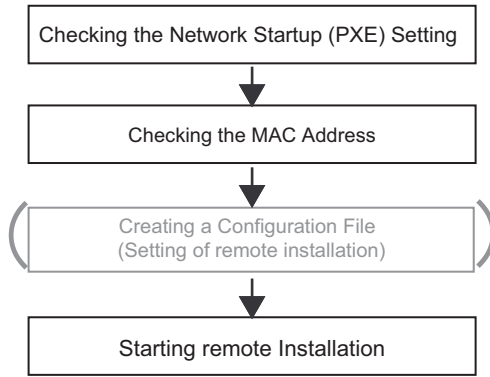**2** Create a shared folder for storing resources.
Create a shared folder for each CD prepared in Step 1.
E.g.:E:\W2K3Sv for Windows Server 2003

3 Extract the resources.
Using Windows Explorer, copy the CD-ROM for the resource to the shared folder.

3.4.5 Starting Remote Installation Using a PXE Server

Perform remote installation using a PXE server in the following procedures.

Checking the Network Startup (PXE) Setting

↓

Checking the MAC Address

↓

(Creating a Configuration File
(Setting of remote installation))

↓

Starting remote Installation

■ Checking the Network Startup (PXE) Setting

Remote installation using a PXE server is performed via the onboard LAN. Enable the network startup (PXE) of the target server.
For more details on network startup, refer to "2.1.2 Hardware Settings" (→pg.46).

■ Checking the MAC Address of the Onboard LAN

In remote installation, target servers are identified according to the MAC address. MAC addresses are unique information to LAN cards. Check the MAC address on each target server. Write down the MAC address of the onboard LAN. For details on how to check the MAC address of an onboard LAN, refer to "2.1.2 Hardware Settings" (→pg.46).

■ Creating a Configuration File

You can create a configuration file on a client computer before starting installation. For the procedure, refer to "3.2.1 Starting Up the Preconfiguration Mode" (→pg.76) and "3.2.2 Configure Settings in Wizards" (→pg.79).
When creating a configuration file on the PXE server, start installation.

₽POINT

▶ Specify the shared name prepared instead of the local CD-ROM as installation information.

3

OS Installation Using ServerStart

■ Starting Installation

1 On the PXE server, start up ServerStart.

If ServerStart has already been started, you do not have to restart it. If it is not started, click
[Start] → [Programs] → [Fujitsu ServerStart] → [ServerStart].
The [Welcome to ServerStart] window appears.

2 Click [Click here to prepare an operating system installation for a PRIMERGY Server].

The [Prepare the installation of an operating system for PRIMERGY Servers] window appears.

3 Click [Creation of ServerStart Configuration file for the installation of an Microsoft Windows Operationg System].

The [Microsoft Windows Operating System Installation] window appears.

4 Click the OS to install.

The [Preparing the Installation] window appears.
If a configuration file has already been created, go to Step 6.

5 Set items in wizards to create a configuration file.

Refer to "3.2.2 Configure Settings in Wizards" (→pg.79). Set items in wizards and save the
configuration file.
Exiting a wizard returns to the preconfiguration mode window.

6 Click [Click here to initiate the Remote Installation Process].

The [Remote Installation Target Server] window appears.

7 Configure remote installation.
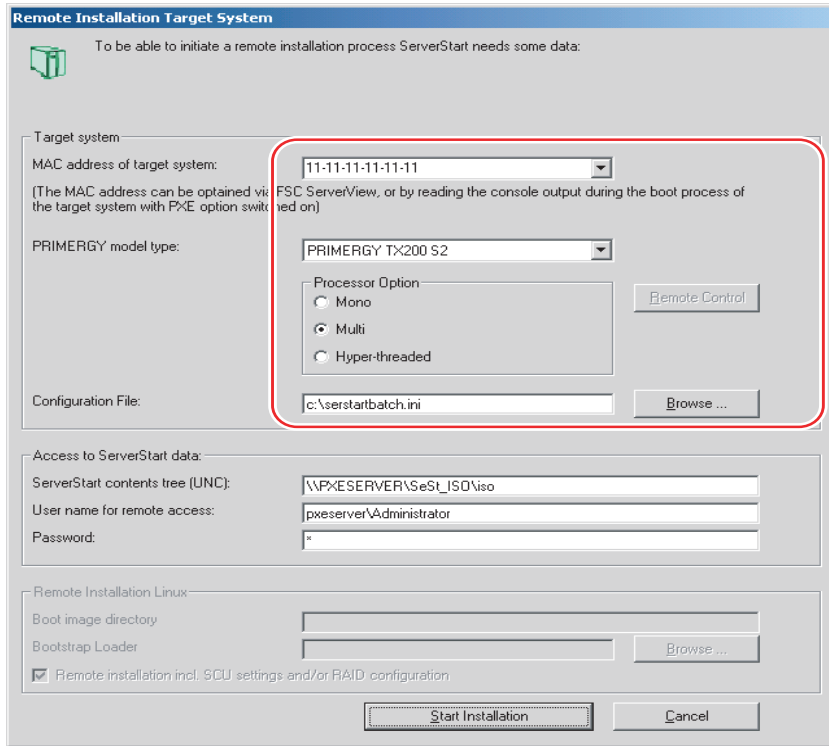
1. Enter the "MAC address of the target system".
2. Select the "PRIMERGY model type".
3. Specify the "Configuration file" containing the installation settings.

8 Click [Start Installation].

Installation starts. All disk contents on the target server are deleted.

The [ServerStart Boot Manager] window appears.

Check that the status is "Waiting for client".

3

OS Installation Using ServerStart

9 Turn on the target server.
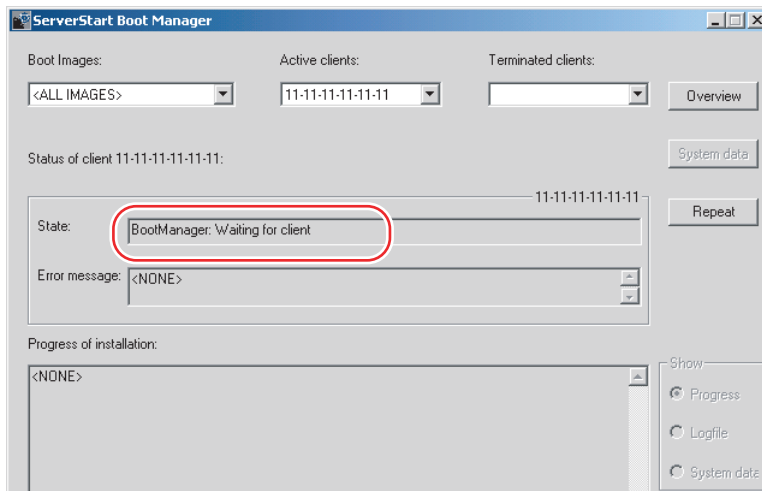
It is started up via the network (PXE) and installation starts.

When the resources have been copied, the "Preparation for automatic OS installation has completed." message appears.

Subsequent installation is performed automatically.

When the installation is completed, an installation completion message appears on the target server.

10 Press any key on the target server.

11 Restart the system on the target server.

The server setup and OS installation have been completed.

Refer to "Chapter 5 Operations after OS Installation" (→pg.133) and perform necessary procedures before starting server operations.

3.4.6 Starting Remote Installation Using a Remote Resource Server

In remote installation using a remote resource server, installation is performed using shared resources on the remote resource server.

Perform "3.4.4 Preparation of Remote Resources" (→pg.100) before starting installation.

■ Configuring a Remote Floppy

A remote floppy is a shared folder for storing and using a configuration file on the network, instead of loading it from the ServerStart floppy disk. When the server does not have a floppy disk drive and installation is performed in guided mode/expert mode, use a remote floppy.

1 Create a new folder in the shared folder on the remote resource server.

E.g.: C:\export\ServerStart\Floppy

2 Create a "ServerStart Floppy Disk" tag file for the ServerStart floppy disk. Start up Command Prompt and enter the following command.

C:\>copy nul C:\export\ServerStart\Floppy\"ServerStart Floppy Disk"

■ Checking Remote Resources

Check that the remote resource server is shared properly.

1 Start up "Command Prompt" on the remote resource server. Enter the following and press the [Enter] key.

prompt:>net share

Check that the created shared folder is displayed properly.

For the net command, refer to Windows Help.

■ Starting Installation

Start installation from the target server.

● In Guided Mode/Expert Mode

1 Turn on the server and insert the ServerStart CD-ROM immediately.

ServerStart starts up and a message appears prompting you to insert the ServerStart floppy disk.

2 Create a ServerStart floppy disk.

When the ServerStart floppy disk supplied with the server is used

1. Insert the ServerStart floppy disk supplied with the server. Make sure that "Removable media" and "A:" are selected and click [Create].

The network startup setting window for remote installation appears.

2. Click [OK].

The [Initialization of ServerStart core running] window appears and unattended installation will be started. Depending on the hardware configuration, this process may take a few minutes. When the process is completed, the [Create a ServerStart Floppy Disk] window appears.

3. Click [Build a ServerStart Floppy Disk].

Creation of a ServerStart floppy disk starts. When the creation is completed, the "Floppy disk has been created." message appears.

When the remote floppy is used

1. Select "Remote (media)" and click [OK].

The [Network Startup Setting] window for remote installation appears.

2. Click [OK].

The [Specify Drive] window appears.

3. Enter [Remote path], [User name], and [Password] and click [OK].

The [Initialization of ServerStart core running] window appears and unattended installation will be started. Depending on the hardware configuration, this process may take a few minutes. When the process is completed, the [Welcome to ServerStart] window appears.

3 Click [Click here to prepare and/or initiate an operating system installation].

The [Select the operating sysytem to be installed] window appears.
Click [Special Hints on Operating System Instalation] and read the contents. Important information such as limitations on disk configuration is described.

4 Click [MS Windows Operating Systems].

The [Install Microsoft Windows Operating System Installation] window appears.

5 Select the OS to install and the mode.

3

OS Installation Using ServerStart

6 Set items in wizards and save the configuration file.

For settings in wizards, refer to "3.1 Guided Mode" (→pg.60) or "3.3 Expert Mode" (→pg.83).
Set items in wizards and save the configuration file. When using the remote floppy, specify the
path to the shared folder for the remote floppy as the configuration file saving location.

POINT

▶ Specify the shared name of the prepared shared folder instead of the local CD-ROM as instal-
lation source information.

7 Click [Click here, to Start the Installation of (OS)].

Installation starts. At steps where the CD-ROM for resources such as the OS to be installed is
necessary, the resource is automatically acquired from the resource server via the network.

8 Eject the CD-ROM and floppy disk and click [OK].

The system restarts. When the installation is completed, an installation completion message
appears on the target server.

9 Press any key on the target server.

10 Restart the system on the target server.

The server setup and OS installation have been completed.
Refer to "Chapter 5 Operations after OS Installation" (→pg.133) and perform necessary procedures
before starting server operations.

● In Preconfiguration Mode

1 Create a configuration file.

For the creation procedure, refer to "3.2 Preconfiguration Mode" (→pg.76).

POINT

▶ Specify the shared name of the prepared shared folder instead of the local CD-ROM as instal-
lation source information.

2 Turn on the server and insert the ServerStart CD-ROM immediately.

ServerStart starts up and a message appears prompting you to insert the ServerStart floppy disk.

3 Set the created configuration file and click [OK].

The [Initialization of ServerStart core running] window appears and unattended installation will
be started. Depending on the hardware configuration, this process may take a few minutes. When
the process is completed, the [ServerStart Unattended Mode] window appears.

4 Click [Start].

Installation starts. At steps where the CD-ROM for resources such as the OS to be installed is
necessary, the resource is automatically acquired from the resource server via the network.

5 Eject the CD-ROM and floppy disk and click [OK].

The system restarts. When the installation is completed, an installation completion message appears on the target server.

6 Press any key on the target server.

7 Restart the system on the target server.

The server setup and OS installation have been completed.
Refer to "Chapter 5 Operations after OS Installation" (→pg.133) and perform necessary procedures before starting server operations.

3.5 Installation on Multiple (the Second and Subsequent) Servers

This chapter explains how to perform installation on multiple servers using ServerStart.
By editing the configuration file created for installation on the first server, you can use it for installation on other servers of the same model and configuration. This reduces the setup time. However, installation on the first server must be performed using ServerStart in guided or preconfiguration mode.

IMPORTANT

▶ Check that ServerStart supplied with the first server is of the same version as that supplied with the other servers. If the version is different, this installation method will not work.

3.5.1 Preparation for Installation

■ Required Software

The following software is required for installation on the second and subsequent servers. Be sure to have these items close at hand.

- CD-ROM for the OS to be installed
- ServerStart CD-ROM
- ServerStart floppy disk
  A: ServerStart floppy disk containing the configuration file used for installation on the first server
  B: ServerStart floppy disks supplied with the ServerStart CD-ROMs for the second and subsequent servers
  If ServerStart floppy disks are not supplied, prepare as many floppy disks as there are servers.
- PRIMERGY Document & Tool CD (Disc 1) (for installing ServerView)
- Service Pack CD-ROM for the OS to be installed

■ Preparatory Procedure

Perform the following procedure before installation.
Using Explorer or Command Prompt, copy the ServerStart floppy disk (A) to the ServerStart floppy disk (B).

3.5.2 Installation in Guided Mode

Edit the configuration file and perform installation in guided mode.

1 Turn on the server and insert the ServerStart CD-ROM immediately after that.

ServerStart starts up and a message appears prompting you to insert the ServerStart floppy disk.

2 Insert the ServerStart floppy disk copied in the preparatory procedure into the floppy disk drive and click [Create].

The network setting window for remote installation appears.

3 Click [OK].

The [Initialization of ServerStart core running] window appears and unattended installation will be started. Depending on the hardware configuration, this process may take a few minutes. When the process is completed, the [Create a ServerStart Floppy Disk] window appears.

4 Click [or insert a Server Start Floppy Disk to Start Server Start].

The [Welcome to ServerStart] window appears.

5 Click [Click here to prepare and/or initiate an operation system installation].

The [Select the operating system to be installed] window appears.

6 Click [MS Windows Operating Systems].

The [Microsoft Windows Operating System Installation] window appears.

7 Click the OS to install.

8 Click [Prepare & initiate an unattended installation of (OS)].

The guided mode starts.

9 Click [Start here to create a complete configuration file].

The [Open ServerStart Configuration File] window appears.

10 Specify "SerStartBatch.ini" on drive A and click [Create].

The display returns to the guided mode window.
For procedures from setting wizards to completion of installation, refer to "3.1 Guided Mode" (→pg.60).
When performing remote installation, refer to "3.4 Remote Installation" (→pg.90).

3

OS Installation Using ServerStart

IMPORTANT

Settings values in wizards

▶ Setting items in wizards are set to the values set on the first server. For installation on subsequent servers, you must change the following items in the "OS installation wizard". For other items, change the settings as necessary. You do not need to start up wizards where no settings will be changed.

table: Settings to be Changed for Installation on Subsequent Servers

Window name	Setting item name	Remarks
User Information	Computer name	The setting must be changed when the second and subsequent servers are on the same network as the first server.
	Product ID/CD key	The setting must be changed.
Network Protocol	IP address	The setting must be changed when the second and subsequent servers are on the same network as the first server.

▶ If the settings for the first server are not reflected to wizards, perform the procedure over again from copying the floppy disk.

3.5.3 Installation in Preconfiguration Mode

Edit the configuration file and perform installation in preconfiguration mode.
If ServerStart is not installed in the client computer where the preconfiguration mode is executed, refer to "2.4 Preparation for Using ServerStart on a Client Computer" (→pg.54) to install ServerStart. If a different version of ServerStart has been installed, uninstall it and install the proper version. For details on how to uninstall ServerStart, refer to "2.4.2 Uninstalling ServerStart" (→pg.57).

IMPORTANT

▶ ServerStart starts up when it is installed. However, be sure to follow these installation procedures. Performing the procedure in "3.2.1 Starting Up the Preconfiguration Mode" (→pg.76) deletes the contents of the ServerStart floppy disk, making the disk unavailable for installation on multiple servers.

1 Start up ServerStart.

If ServerStart has already been started, you do not have to restart it. If it is not started, perform the following startup procedures.

When the CD has been copied on Windows 2000 Professional/Windows XP Professional

1. Click [Start] → [Programs] → [Fujitsu ServerStart] → [ServerStart].

ServerStart starts up and the [Welcome to ServerStart] window appears.

When Windows NT is used or CD has not been copied

1. Insert the ServerStart CD-ROM into the client computer.

ServerStart starts up and the [Welcome to ServerStart] window appears.

2 Select the OS to be installed.

The preconfiguration mode starts up.

3 Insert the ServerStart floppy disk copied in the preparatory procedure into the floppy disk drive and click [Start here to configuration file].

The [Open ServerStart Configuration File] window appears.

4 Specify "SerStartBatch.ini" on drive A and click [Create].

The display returns to the preconfiguration mode window.

For procedures from setting wizards to completion of installation, refer to "3.2 Preconfiguration Mode" (→pg.76).

When performing remote installation, refer to "3.4 Remote Installation" (→pg.90).

IMPORTANT

Settings values in wizards

▶ Setting items in wizards are set to the values set on the first server. For installation on subsequent servers, you must change the following items in the "OS installation wizard". For other items, change the settings as necessary. You do not need to start up wizards where no settings will be changed.

table: Settings to be Changed for Installation on Subsequent Servers

Window name	Setting item name	Remarks
User Information	Computer name	The setting must be changed when the second and subsequent servers are on the same network as the first server.
	Product ID/CD key	The setting must be changed.
Network Protocol	IP address	The setting must be changed when the second and subsequent servers are on the same network as the first server.

▶ If the settings for the first server are not reflected to wizards, perform the procedures from copying the floppy disk over again.

Chapter 4
Manual OS Installation

This chapter explains how to install the OS
without using ServerStart.

4.1 Creating Driver Disks

When installing the OS manually, it is necessary to create driver installation disks beforehand. Also, driver disks must be created when you add an expansion card during server operation.

■ Preparation for Creating Driver Disks

You need floppy disks for driver disks. A floppy disk is necessary for each driver.
Driver disks are created using the ServerStart FloppyBuilder function. The FloppyBuilder function is available in the following environments.

- Starting up the ServerStart system on a client computer (Recommended)
- Starting up the system from the ServerStart CD-ROM on the server

POINT

▶ When creating driver disks on a client computer, it is necessary to install ServerStart on the client computer beforehand. Install it according to "2.4 Preparation for Using ServerStart on a Client Computer" (→pg.54).
If a different version of ServerStart has been installed, uninstall it and install the proper version. For details on how to uninstall ServerStart, refer to "2.4.2 Uninstalling ServerStart" (→pg.57).

IMPORTANT

▶ The FloppyBuilder function may not operate correctly if you start up ServerStart while ServerStart of a different version is installed in the computer. Make sure to uninstall a different version of ServerStart.

4.1.1 Required Driver Disks

The driver disks to be created differ depending on the OS to be installed.

■ For Windows Server 2003

table: Drivers Required for Installing Windows Server 2003

Expansion card / onboard controller	Driver
Chipset	Intel E7520/E7320 Chipset Ver6.2.0.1005
Graphic controller	Standard driver provided with the OS
RAID Card (PG-140D1/PG-142E3)	PG-140D1/142E3 Windows 2000/2003 Drivers Disk V3.0L10 [1]
Onboard SCSI	PRIMERGY TX200 S2 Onboard SCSI Driver Windows 2003 Drivers Disk V1.0L10 [1]
Onboard LAN	PRIMERGY TX200 S2 Onboard LAN Driver for Windows 2000/2003 V7.6.6
LAN card (PG-1852 / PG-1862 / PG-1882 / PG-1892)	PG-1852/1862/188x/189x LAN Driver for Windows 2003 Ver8.3 [1]
SCSI Ctrl U160 (PG-128)	Standard driver provided with the OS
Fibre Channel Controller (PG-FC106)	PG-FC106 Windows 2000/2003 Drivers Disk V5.10a10 [1]
Other expansion cards	Driver supplied with the expansion card

*1: Created from the ServerStart CD-ROM

■ For Windows 2000 Server

table: Drivers Required for Installing Windows 2000 Server

Expansion card / onboard controller	Driver
Chipset	Intel E7520/E7320 Chipset Ver6.2.0.1005
Graphic controller	PRIMERGY TX200 S2 Onboard VGA Driver Ver5.0.2195.5005
RAID card (PG-140D1/PG-142E3)	PG-140D1/142E3 Windows 2000/2003 Drivers Disk V3.0L10 [1]
Onboard SCSI	PRIMERGY TX200 S2 Onboard SCSI Driver Windows 2000 Drivers Disk V1.0L10 [1]
Onboard LAN	PRIMERGY TX200 S2 Onboard LAN Driver for Windows 2000/2003 V7.6.6
LAN card (PG-1852/PG-1862/PG-1882/PG1892)	PG-1852/1862/188x/189x LAN Driver for Windows 2000 Ver8.3 [1]
SCSI Ctrl U160 (PG-128)	Standard driver provided with the OS
Fibre Channel Controller (PG-FC106)	PG-FC106 Windows 2000/2003 Drivers Disk V5.10a10 [1]
Other expansion cards	Driver supplied with the expansion card

*1: Created from the ServerStart CD-ROM

⚲POINT

▸ For the latest drivers, refer to the Fujitsu PRIMERGY website (http://primergy.fujitsu.com).

4

Manual OS Installation

4.1.2 How to Create Driver Disks

Driver disks are created from the ServerStart CD-ROM using the ServerStart FloppyBuilder function. If ServerStart has already been started, you do not have to restart it. If it is not started, perform the following startup procedures.
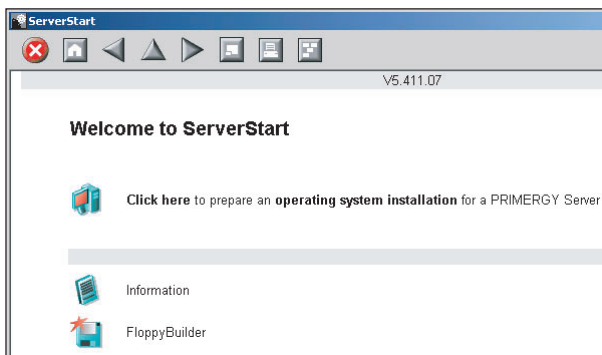
■ Starting ServerStart

● For Creation on a Client Computer

When the CD has been copied on Windows 2000 Professional/Windows XP Professional

1 Click [Start] → [Programs] → [Fujitsu ServerStart] → [ServerStart].

ServerStart starts up and the [Welcome to ServerStart] window appears.

When Windows NT is used or the CD has not been copied

1 Insert the ServerStart CD-ROM into the client computer.

ServerStart starts up and the [Welcome to ServerStart] window appears.

● For Creation on the Server

1 Turn on the server and insert the ServerStart CD-ROM immediately.

ServerStart starts up and a message appears prompting you to insert the ServerStart floppy disk.

2 Insert the attached [ServerStart floppy disk] into the server's floppy disk drive. Then make sure "Removable media" and "A:" are selected and click [Create].

A network setup window for remote installation appears.

POINT

▶ If a configuration file already exists in the ServerStart floppy disk and [OK] is clicked without clicking [Create], the [ServerStart Unattended Mode] window appears. Make sure to click [Exit]. The [Welcome to ServerStart] window appears.
If [Start] is clicked in the [ServerStart Unattended Mode] window, the installation of the server will start and all disk contents will be deleted.

3 Click [OK].

The [Initializing ServerStart] window appears and unattended installation will be started. Depending on the hardware configuration, this process may take a few minutes. When the process is completed, the [Create a ServerStart Floppy Disk] window appears.

4 Click [or Insert a ServerStart Floppy Disk to Start ServerStart].

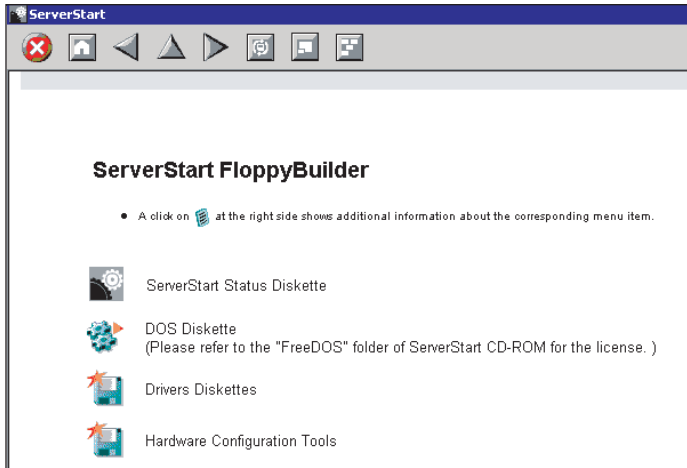The [Welcome to ServerStart] window appears.

5 Eject the ServerStart floppy disk.

Manual OS Installation

4

■ Creating Driver Disks

Start up ServerStart and confirm that the [Welcome to ServerStart] window is displayed.

1 Click [FloppyBuilder].

The [ServerStart FloppyBuilder] window appears.

2 Click [Drivers Diskettes].

The [FloppyBuilder Driver Disk] window appears.

3 Click the type of the driver you want to create.

4 Click the driver disk you want to create.

Follow the message and insert a floppy disk.

5 Perform the procedures following the messages on the window.

The floppy disk will be formatted automatically and file copying will start.
The driver disk is automatically created. When a message appears indicating that crating the disk is completed, click [OK] and eject the floppy disk.

4.2 Starting Manual Installation

This section explains the procedures for installing the OS manually.

4.2.1 Installing Windows Server 2003

1 Create driver disks.

Prepare necessary drivers before installing Windows Server 2003.

Some drivers are created from the ServerStart CD-ROM. For how to create driver disks, refer to "4.1 Creating Driver Disks" (→pg.114).

2 Insert the Windows Server 2003 CD-ROM.

Turn on the server and insert the Windows Server 2003 CD-ROM immediately into the CD-ROM drive. Check there are no floppy disks in the floppy disk drive. When the active area is specified on the hard disk, the following message appears.

```
Press any key to boot from CD....
```

Pressing any key while this message is displayed boots the system from the CD-ROM.

3 The [Windows Server 2003 Setup] window appears.

Immediately, the following message appears at the bottom of the window. Press the [F6] key.

```
Press F6 if you need to install a third party
SCSI or RAID driver ...
```

IMPORTANT

▶ This message will be displayed for a short time after the setup window (blue screen) appears. Press the [F6] key immediately after the window turns blue.

4 Install the drivers manually.

1. When the following message appears, press the [S] key.

```
To specify additional SCSI adapters, CD-ROM drives,
or special disk controllers for use with Windows,
including those for which you have a device
support disk from a mass storage device
manufacturer, press S.
```

4

Manual OS Installation

2. When the "Please insert the disk labeled Manufacturer-supplied hardware support disk into Drive A:" message appears, insert the driver disk created from the ServerStart CD-ROM and press the [Enter] key.

The following message appears.

```
You have chosen to configure a SCSI Adapter for use with
Windows, using a device support disk provided by an
adapter manufacturer.
Select the SCSI Adapter you want from the following list,
or press ESC to return to the
previous screen.
```

3. Select the item appropriate for the card used in the server and press the [Enter] key.

   • For a RAID card

```
LSI MEGARAID Products for Windows 2003 (x86)
```

   • For an onboard SCSI controller card

```
LSI Logic PCI SCSI/FC MPI Miniport Driver
```

4. When the following message appears, press the [S] key.

```
The driver you provided seems to be newer than the Win-
dows default driver.
```

5. Follow the instructions in the window to perform installation.
   When a message prompting you to insert a floppy disk appears, insert the proper driver disk and press the [Enter] key.

5 When a Fiber Channel Controller (PG-FC106) is installed, install the fiber channel card driver.

1. When the following message appears, press the [S] key.

```
To specify additional SCSI adapters, CD-ROM drives,
or special disk controllers for use with Windows,
including those for which you have a device
support disk from a mass storage device
manufacturer, press S.
```

2. When the "Please insert the disk labeled Manufacturer-supplied hardware support disk into Drive A:" message appears, insert the fiber channel card driver disk created from the ServerStart CD-ROM and press the [Enter] key.

The following message appears.

```
You have chosen to configure a SCSI Adapter for use with
Windows, using a device support disk provided by an
adapter manufacturer.
Select the SCSI Adapter you want from the following list,
or press ESC to returnto the
previous screen.
```

3. Select the following item and press the [Enter] key.

```
Emulex LP9802 PCI-Fiber Channel HBA
```

4. When the following message appears, press the [S] key.

```
The driver you provided seems to be newer than the
Windows default driver.
```

6 Follow the instructions from the setup program to continue the installation procedure.

If a message indicating that the driver has failed in the Windows logo test for validating the compatibility with Windows appears, select [Yes] to continue the installation procedure.

7 Install the chipset driver.
   1. Insert the ServerStart CD-ROM into the drive of the server.
      When the ServerStart window appears, exit ServerStart.
   2. Execute the following command on the ServerStart CD-ROM.
      [CD-ROM drive] :\DRIVERS\ChipSet\Intel\infinst_autol.exe
      The installation wizard starts up.
   3. Click [Next]. Follow instructions in the window to perform installation.
   4. When the "InstallShield(R) wizard has completed." message appears, eject the ServerStart CD-ROM from the CD-ROM drive and click [Finish] to restart the system.

8 Install the LAN driver.

Install the LAN driver using the driver disk created from the ServerStart CD-ROM. For more details, refer to "4.3 Installing the LAN Driver" (→pg.127).

9 Install the SAF-TE driver.
   1. Insert the ServerStart CD-ROM into the drive of the server.
      When the ServerStart window appears, exit ServerStart.
   2. Click [Start] → [Administrative Tools] → [Computer Management].
   3. Click [Device Manager].
   4. Double-click [TOSHIBA SAF-TE SCSI Processor Device] under [System devices].
      The properties window appears.
   5. Click the [Driver] tab and click [Update Driver].
      The "Device Driver Upgrade Wizard" window appears.
   6. Click [Next].
   7. Select [Find an optimum driver (Recommended)] and click [Next].
   8. Select only [CD-ROM drive] in [Search location options] and click [Next].
   9. Select [Install another driver] and click [Next].
   10. Select [FSC SCSI Termination Module] and click [Next].
       Installation starts. When it is completed, a completion message appears.
   11. Click [Finish].
   12. Click [Close] to close the properties window.

4

Manual OS Installation

10 Installing high reliability tools.

To ensure stable server operation, refer to "Chapter 6 High Reliability Tool" (→pg.167) and install high reliability tools. When a RAID card is used, RAID Management Tool (Global Array Manager) also install at the same time. When manually installing RAID Management Tool, refer to "6.1.1 Installing RAID Management Tool (Global Array Manager)" (→pg.168).

The installation of Windows Server 2003 has completed.

● Before Starting Operation

After OS installation, refer to "Chapter 6 High Reliability Tool" (→pg.167) and perform the necessary procedures.

4.2.2 Installing Windows 2000 Server

1 Create driver disks.

Prepare necessary drivers before installing Windows 2000 Server.
Some drivers used with Windows 2000 Server are created from the ServerStart CD-ROM. For how to create driver disks, refer to "4.1 Creating Driver Disks" (→pg.114).

2 Insert the Windows 2000 Server CD-ROM.

Turn on the server and insert the Windows 2000 Server CD-ROM immediately into the CD-ROM drive. Check there are no floppy disks in the floppy disk drive. When the active area is specified on the hard disk, the following message appears.

```
Press any key to boot from CD....
```

Pressing any key while this message is displayed boots the system from the CD-ROM.

3 The [Windows 2000 Server Setup] window appears.

Immediately, the following message appears at the bottom of the window. Press the [F6] key.

```
Press F6 if you need to install a third party SCSI or RAID
driver ...
```

IMPORTANT

▶ This message will be displayed for a short time after the setup window (blue screen) appears.
Press the [F6] key immediately after the window turns blue.

4 Install the drivers manually.

1. When the following message appears, press the [S] key.

```
To specify additional SCSI adapters, CD-ROM drives,
or special disk controllers for use with Windows 2000,
including those for which you have a device
support disk from a mass storage device
manufacturer, press S.
```

2. When the "Please insert the disk labeled Manufacturer-supplied hardware support disk into Drive A:" message appears, insert the driver disk created from the ServerStart CD-ROM and press the [Enter] key.

The following message appears.

```
You have chosen to configure a SCSI Adapter for use
with Windows 2000, using a device support disk
provided by an adapter manufacturer.
Select the SCSI Adapter you want from the following
list, or press ESC to return to the previous screen.
```

3. Select the item appropriate for the card used in the server and press the [Enter] key.

• For a RAID card

```
LSI MEGARAID Products for Windows 2000
```

• For an onboard SCSI controller card

```
LSI Logic PCI SCSI/FC MPI Miniport Driver
```

4. Follow instructions in the window to perform installation.

When a message prompting you to insert a floppy disk appears, insert the proper driver disk and press the [Enter] key.

POINT

▶ Repeat these procedures to install a driver for another card.

5 Follow the instructions from the setup program to continue the installation procedures.

IMPORTANT

Cautions on Restarting

▶ In the course of installation, a message appears to indicate that the setup program restarts. Wait until it restarts automatically.

6 Install the chipset driver.

1. Insert the ServerStart CD-ROM into the drive of the server.
   When the ServerStart window appears, exit ServerStart.
2. Execute the following command on the ServerStart CD-ROM.
   [CD-ROM drive] :\DRIVERS\ChipSet\Intel\infinst_autol.exe
   The installation wizard starts up.
3. Click [Next]. Follow instructions in the window to perform installation.
4. When the "InstallShield(R) wizard has completed." message appears, eject the ServerStart CD-ROM from the CD-ROM drive and click [Finish] to restart the system.

7 Install the LAN driver.

Install the LAN driver using the driver disk created from the ServerStart CD-ROM. For more details, refer to "4.3 Installing the LAN Driver" (→pg.127).

4

Manual OS Installation

8 Install the SAF-TE driver.

1. Insert the ServerStart CD-ROM into the drive of the server.

    When the ServerStart window appears, exit ServerStart.

2. Right-click the [My Computer] icon on the desktop and click [Manage] from the displayed menu.

3. Click [Device Manager] from the displayed list.

4. Double-click [TOSHIBA SAF-TE SCSI Processor Device] under [System devices].

    The properties window appears.

5. Click the [Driver] tab and click [Update Driver].

    The "Device Driver Upgrade Wizard" window appears.

6. Click [Next].

7. Select [Find an optimum driver (Recommended)] and click [Next].

8. Select only [CD-ROM drive] in [Search location options] and click [Next].

9. Select [Install another driver] and click [Next].

10. Select [FSC SCSI Termination Module] and click [Next].

    Installation starts. When it is completed, a completion message appears.

11. Click [Finish].

12. Click [Close] to close the properties window.

9 Install the USB 2.0 driver.

The procedure differs depending on whether Service Pack 4 is applied to the CD-ROM for the OS used.

When Service Pack 4 is applied

1. Insert the ServerStart CD-ROM into the drive of the server.

    When the ServerStart window appears, exit ServerStart.

2. Right-click the [My Computer] icon on the desktop and click [Manage] from the displayed menu.

3. Click [Device Manager] from the displayed list.

4. Double-click [USB 2.0 Root Hub] under [Universal Serial Bus (USB) controller].

    The properties window appears.

5. Click the [Driver] tab and click [Update Driver].

    The "Device Driver Upgrade Wizard" window appears.

6. Click [Next].

7. Select [Find an optimum driver (Recommended)] and click [Next].

8. Select only [CD-ROM drive] in [Search location options] and click [Next].

9. Select [Install another driver] and click [Next].

10. Select [USB 2.0 Root Hub] and click [Next].

    Installation starts. When it is completed, a completion message appears.

11. Click [Finish].

12. Click [Close] to close the properties window.

When Service Pack 4 is not applied

1. Insert the ServerStart CD-ROM into the drive of the server.
   When the ServerStart window appears, exit ServerStart.
2. Right-click the [My Computer] icon on the desktop and click [Manage] from the displayed menu.
3. Click [Device Manager] from the displayed list.
4. Double-click [Universal Serial Bus (USB) controller] under [Other devices].
   The properties window appears.
5. Click [Reinstall Driver] in the [General] tab window.
   The "Device Driver Upgrade Wizard" window appears.
6. Click [Next].
7. Select [Install an optimum driver (Recommended)] and click [Next].
   The [Identify Driver File] window appears.
8. Check [CD-ROM drive] in [Search location options] and click [Next].
   Detected drivers are displayed.
9. Click [Next].
   Driver installation starts. When it is completed, a completion window appears.
10. Click [Finish].
11. Click [Close] to close the properties window.

10 Install the display driver.

1. Insert the ServerStart CD-ROM into the drive of the server.
   When the ServerStart window appears, exit ServerStart.
2. Right-click the [My Computer] icon on the desktop and click [Manage] from the displayed menu.
3. Click [Device Manager] from the displayed list.
4. Double-click [ATI Technologies Inc. RAGE XL PCI] under [Display Adapter].
   The properties window appears.
5. Click the [Driver] tab and click [Update Driver].
   The [Start Device Driver Upgrade] window appears.
6. Click [Next].
   The [Install Hardware Device Driver] window appears.
7. Select [Find an optimum driver (Recommended)] and click [Next].
   The [Identify Driver File] window appears.
8. Select [CD-ROM drive] in [Search location options] and click [Next].
9. When a message indicating that the driver has been found appears in the [Find Driver File] window, click [Next].
   When the installation is completed, a completion message appears.
10. Click [Finish].
11. Click [Close] to close the properties window.
12. Eject the ServerStart CD-ROM from the CD-ROM drive and restart the system to make the settings effective.

11 After driver installation, apply Windows 2000 Service Pack.

For details, refer to the description in the window.

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Manual OS Installation

12 Installing high reliability tools.

To ensure stable server operation, refer to "Chapter 6 High Reliability Tool" (→pg.167) and install high reliability tools. When a RAID card is used, RAID Management Tool (Global Array Manager) also install at the same time. When manually installing RAID Management Tool, refer to "6.1.1 Installing RAID Management Tool (Global Array Manager)" (→pg.168).

The installation of Windows 2000 Server has completed.

● **Before Starting Operation**

After OS installation, refer to "Chapter 6 High Reliability Tool" (→pg.167) and perform the necessary procedures.

4.2.3 Installing Linux

For the use of Linux, refer to the Fujitsu PRIMERGY website (http://primergy.fujitsu.com).

4.3 Installing the LAN Driver

This section explains the procedure for installing the driver.
In addition to the case where the OS is installed manually, the driver must be installed when a LAN card is added.

4.3.1 Installing the LAN Driver (Windows Server 2003)

The LAN driver installation procedure differs depending on whether the network adapter was recognized during the OS installation.

☞POINT

▶ For the following LAN cards, the network adapter is recognized when the card is mounted during OS installation.
  • PG-1852
  • PG-1862

1 Click [Start] → [Administrative Tools] → [Computer Management].

2 Click [Device Manager].
On the Device Manager list, check if a recognized network adapter is present.
(Window example)
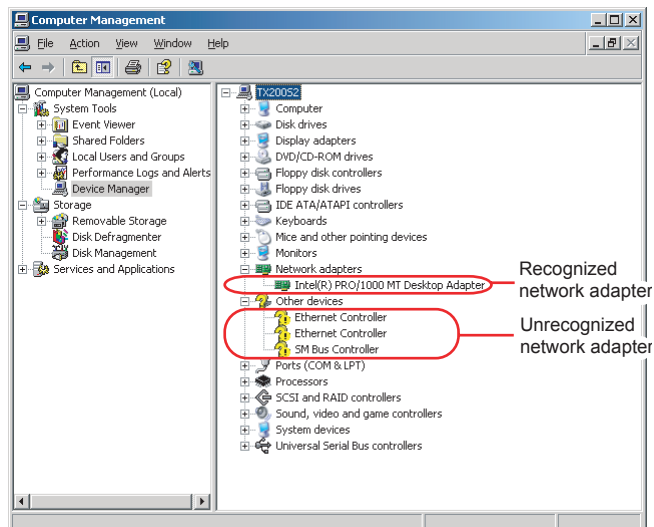
When a recognized network adapter is present, [Network adapters] appears.
• When a recognized network adapter is present

Perform "■ Updating LAN Drivers" (→pg.128) on the LAN device name under [Network adapters], then "■ Installing the LAN Driver" (→pg.129) on [Ethernet controller] under [Other devices].

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  • When a recognized network adapter is not present

   Perform "■ Installing the LAN Driver" (→pg.129) on [Ethernet controller] under [Other devices].

POINT

When the LAN driver is installed to [Other devices] before updating the driver for the network adapter recognized immediately after the OS installation

▶ When driver installation starts, the following window appears.
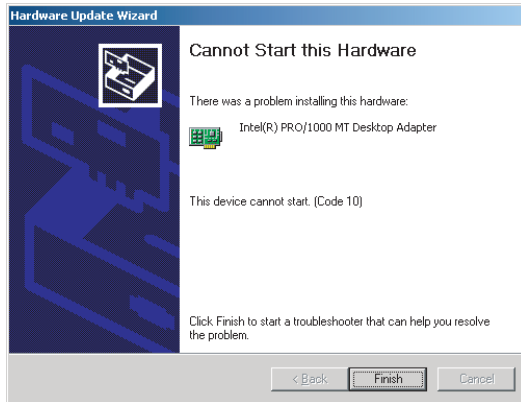
Clicking [Finish] displays the [Help and Support Center] window. Click [X] to close the window.
After installation, the "!" mark is displayed at the LAN device name in Device Manager. Device names are displayed properly when all LAN drivers are installed and the system is restarted.

■ Updating LAN Drivers

Perform the following procedures on all LAN device names under [Network adapters] in [Device Manager].

  1 Double-click a LAN device name under [Network adapters].

    POINT

    ▶ Names of the LAN devices are displayed as follows.

<div align="center">table: LAN device name</div>

LAN cards	LAN device name
PG-1852	Intel(R) PRO/1000 MT Desktop Adapter
PG-1862	Intel(R) PRO/1000 MT Dual Port Server Adapter

  2 Insert the driver disk created from the ServerStart CD-ROM into the server.

  3 Click [Update Driver] in the [Driver] tab window.

    The "Welcome to the Hardware Update Wizard" window appears.

  4 Select [Install the software automatically (Recommended)] and click [Next].

    The driver will be installed.

  5 Click [Finish].

6 Click [Close] to close the properties window.

■ Installing the LAN Driver

Perform the following procedures on each [Ethernet controller] under [Other devices] in [Device Manager].

1 Insert the driver disk created from the ServerStart CD-ROM into the server. For the onboard LAN, insert the ServerStart CD-ROM.

2 Double-click [Ethernet controller] under [Other devices].
The properties window for the Ethernet controller appears.

3 Click [Reinstall Driver] in the [General] tab window.
The [Welcome to the Hardware Update Wizard] window appears.

4 Select [Install the software automatically (Recommended)] and click [Next].
The driver will be installed.

5 Click [Finish].

6 Click [Close] to close the properties window.

7 Remove the driver disk and restart the system.

₽POINT

▶ After LAN driver installation, names of the LAN devices are displayed as follows.

table: LAN device name

LAN cards	LAN device name
Onboard LAN (1000BASE-T)	Broadcom NetXtreme Gigabit Ethernet
PG-1852	Intel(R) PRO/1000 MT Desktop Adapter
PG-1862	Intel(R) PRO/1000 MT Dual Port Server Adapter
PG-1882	Intel(R) PRO/1000 MF Server Adapter (LX)
PG-1892	Intel(R) PRO/1000 MT Server Adapter

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4.3.2 Installing the LAN Driver (Windows 2000 Server)

1 Insert the driver disk created from the ServerStart CD-ROM into the server.
For the onboard LAN, insert the ServerStart CD-ROM.

2 Right-click the [My Computer] icon on the desktop and select [Manage] from
the displayed menu.

3 Click [Device Manager].
As many [Ethernet controller] items as the installed LAN ports are displayed under [Other devices].
Double-click each [Ethernet controller] item and perform the following Steps 4 to 11 on all LAN ports.

4 Double-click [Ethernet controller] under [Other devices].
The properties window for the Ethernet controller appears.

5 Click [Reinstall Driver] in the [General] tab window.
The [Device Driver Upgrade Wizard] window appears.

6 Click [Next].

7 Select [Install an optimum driver (Recommended)] and click [Next].
The [Identify Driver File] window appears.

8 Select [Floppy disk drive] in [Search location options] and click [Next].
Detected drivers are displayed.

9 Click [Next].
Driver installation starts. When it is completed, a completion window appears.

10 Click [Finish].

11 Click [Close] to close the properties window.

POINT

▶ When [Ethernet controller] items are displayed under [Other devices], perform the above Steps
4 to 11 on all [Ethernet controller] items.

12 Remove the driver disk and restart the system.

POINT

‣ After LAN driver installation, names of the LAN devices are displayed as follows.

table: LAN device name

LAN cards	LAN device name
Onboard LAN (1000BASE-T)	Broadcom NetXtreme Gigabit Ethernet
PG-1852	Intel(R) PRO/1000 MT Desktop Adapter
PG-1862	Intel(R) PRO/1000 MT Dual Port Server Adapter
PG-1882	Intel(R) PRO/1000 MF Server Adapter (LX)
PG-1892	Intel(R) PRO/1000 MT Server Adapter

■ When a LAN Card is Added

The following window may appear at system startup after addition of a LAN card. Perform the appropriate procedure according to the displayed window.

• When the "New Hardware Detection Wizard" window appears
  Insert the driver disk created from the ServerStart CD-ROM and perform Step 6 and subsequent steps in "Updating LAN Drivers".
• When the [Insert Disk] window prompts you to insert the "Intel PRO Adapter CD-ROM or floppy disk" or "Intel® PRO/1000 Disk Driver".
  Insert the driver disk created from the ServerStart CD-ROM and install the driver.

IMPORTANT

‣ The "Digital signature was not found" message may appear. If it appears, click [Yes] to continue the operations.
‣ When the [Overwriting the Files] window appears, normally do not overwrite the files (select [Do not overwrite all files]).

4.3.3 Latest Drivers

For the latest drivers, refer to the Fujitsu PRIMERGY website (http://primergy.fujitsu.com).

4

Manual OS Installation

Chapter 5

Operations after OS Installation

This chapter explains the operations to be performed after OS installation. Be sure to perform these operations before operating the server.

5.1 Memory Dump/Paging File Setting

Before start operating this server, configure the setting for obtaining memory dump. The setting procedure varies between Windows Server 2003 and Windows 2000 Server.

● Memory Dump

If memory dump is set, debugging information will be automatically saved when a STOP error (fatal system error) occurs in the system. Using the saved memory dump, error cause can be analyzed.

If the amount of installed memory is large, pay special attention when setting the memory dump file. The settings for obtaining memory dump should be configured after installing the files to be used for operations (OS, applications, etc.).

5.1.1 How to Obtain Memory Dump For Windows Server 2003

Check the following settings before starting configuration to obtain memory dump.

■ Checking Hard Disk Free Space

To obtain memory dump, sufficient hard disk capacity is required for creating paging files and memory dump files.

The obtainable dump types and required hard disk capacity are as follows:

● Complete Memory (Full) Dump

When the system unexpectedly stops, contents of the whole system memory are recorded. The file is stored in the directory displayed in the [Dump file] box.

- Paging file: Installed physical memory + 11MB (Recommended: Installed physical memory x 1.5)
- Memory dump file: Same amount as installed physical memory

● Kernel Memory Dump

Information of only kernel memory space is recorded. The file is stored in the directory displayed in the [Dump file] box. Capacity required for kernel memory dump is as follows:

- Paging file: Depending on installed physical memory amount
  For memory of 256 to 1,373MB - Installed physical memory x 1.5
  For memory of 1,374MB or more - 32-bit system: 2GB + 16MB, 64-bit system: RAM size + 128MB
- Memory dump file: Depending on the used amount of kernel-mode address space during STOP

● Small Memory Dump

Minimum amount of useful information for problem identification is recorded. If this option is specified, a new file is created each time the system unexpectedly stops.

History of such files is stored in the directory displayed in [Small dump directory].

- Paging file: 2MB or more
- Memory dump file: 64KB or 128KB

■ Memory Dump File Setting

Set up the memory dump file according to the following procedures:

1 Log on to the server with administrator privileges.

2 Check free space of the drive where the memory dump file is to be stored.

Check the required amount of free space according to "■ Checking Hard Disk Free Space" (→pg.134).

If the drive has no free space, refer to "■ Cannot Collect the Memory Dump" (→pg.277).

3 Click [Start] → [Control Panel] → [System].

The [System Properties] window appears.

4 Click the [Advanced] tab and click [Settings] in [Startup and Recovery].

The [Startup and Recovery] window appears.

5

<div style="text-align: right;">

Operations after OS Installation

</div>
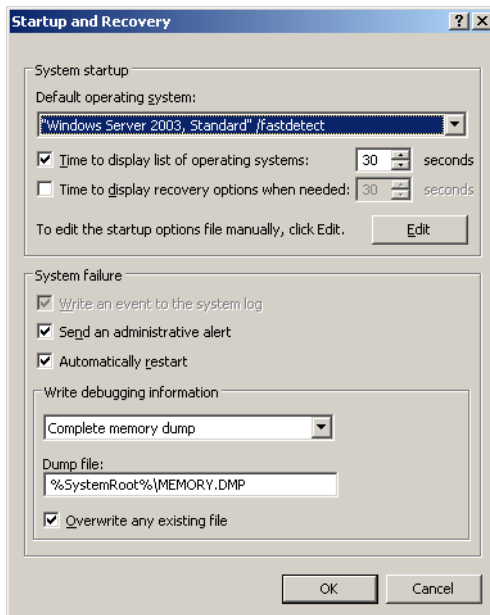
5 Set as follows:

1. In the [Write debugging information] section, select the memory dump file type.
   - Small memory dump (64KB)
     Minimum information is recorded to the memory dump file.
     Each time a fatal error occurs, a new file is created in the directory specified in [Small dump directory].
   - Kernel memory dump
     Only kernel memory is recorded to the memory dump file.
   - Complete memory dump (Recommended)
     The whole system memory information is recorded to the memory dump file.

2. In [Dump file] or [Small dump directory], specify the directory to save the memory dump file, with its full path.
   In case of kernel memory dump or complete memory dump, if [Overwrite any existing file] is checked, debugging information is overwritten to the specified file every time.

**6** Click [OK] to close the [Startup and Recovery] window.

7 Click [OK] to close the [System Properties] window.

8 Restart the system.
The setting is enabled after the system is restarted.

■ Paging File Setting

Set up the paging file according to the following procedures:

1 Log on to the server with administrator privileges.

2 Check free space of the drive where the system is installed.
Check the required amount of free space according to "■ Checking Hard Disk Free Space" (→pg.134).
If the drive has no free space, refer to "■ Cannot Collect the Memory Dump" (→pg.277).

3 Click [Start] → [Control Panel] → [System].
The [System Properties] window appears.

4 Click the [Advanced] tab and click [Settings] in [Performance].
The [Performance Options] window appears.

5 Click the [Advanced] tab.
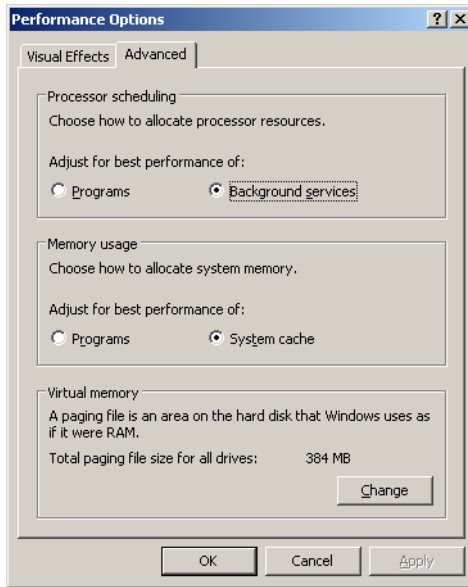
6 Click [Change] in the [Virtual memory] section.
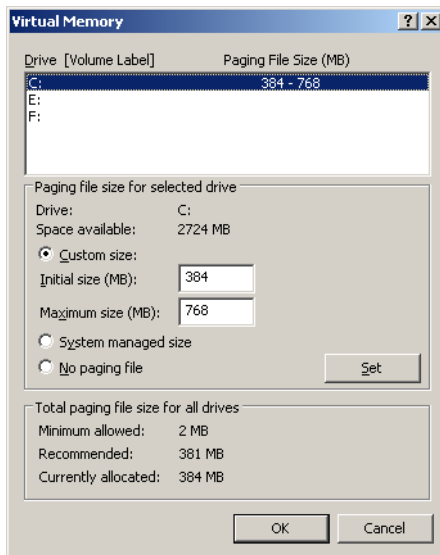
The [Virtual Memory] window appears.

7 Specify the drive where the paging file is to be created.

In [Drive], select the drive where the system is installed.

The selected drive is displayed in [Drive] in [Paging file size for selected drive].

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8 Select [Custom size] and enter a value in [Initial size].

The value depends on the type of the set dump file.

Specify a value larger than the value shown in [Recommended] in [Total paging file size for all drives].

IMPORTANT

▶ When a smaller value is specified for the paging file size, performance may be affected. For maximum system efficiency, be sure to set [Initial size] with a value larger than the [Recommended] size described in [Total paging file size for all drives]. The recommended size is total memory installed in the system x 1.5. However, if a program consuming a large amount of memory is regularly used, set a larger size as required.

9 Enter a value in [Maximum size].

Specify a value larger than the [Initial size].

10 Save the settings.

Click [Set] in the [Paging file size for selected drive] section.

The settings are saved, and the value specified is displayed in [Paging File Size] of [Drive].

11 Click [OK] to close the [Virtual Memory] window.

12 Click [OK] to close the [Performance Options] window.

13 Click [OK] to close the [System Properties] window.

14 Restart the system.

The setting is enabled after the system is restarted.

5.1.2 How to Obtain Memory Dump For Windows 2000 Server

Check the following settings before starting configuration to obtain memory dump.

■ Checking Hard Disk Free Space

Once memory dump is obtained, a file containing contents of the whole physical memory installed in the system is created. Before storing the dump file, confirm that there is sufficient free space in the hard disk.

The obtainable dump types and required hard disk capacity are as follows:

● Complete Memory (Full) Dump

When the system unexpectedly stops, contents of the whole system memory are recorded. If this option is selected, space to retain the paging file as large as the whole physical memory $\times$ 1.3 is required in the boot volume.

• Included information

Common header, all virtual address pages that are not paged out during STOP

- Required size

  Installed physical memory $\times$ 1.3

● Kernel Memory Dump

Information of only kernel memory space is recorded. When the system unexpectedly stops, the process that records information to the log file is speeded up. According to the amount of memory installed in the server, available area of 50 to 800MB is required for the paging file in the boot volume.

- Included information

  Common header, summary dump header (complete memory dump) - (user process space page) - (cache region page) - (unused pool region page)

- Required size

  Depending on the used amount of kernel-mode address space during STOP

● Small Memory Dump

Minimum amount of useful information for problem identification is recorded. In this option, a paging file of at least 2MB is required in the boot volume. Also, a new file is created each time the system unexpectedly stops.

History of such files is stored in the directory displayed in [Small dump directory] (usually, C:\winnt\minidump).

- Included information

  Common header, minidump header, kernel module, memory information, processor information, process information, thread information, stuck page, unloaded module information

- Required size

  2MB or more

■ Memory Dump File Setting

Set up the memory dump file according to the following procedures:

1 Log on to the server with administrator privileges.

2 Check free space of the drive where the memory dump file is to be stored.

Check the required amount of free space according to "■ Checking Hard Disk Free Space" (→pg.138).

If the drive has no free space, refer to "■ Cannot Collect the Memory Dump" (→pg.277).

3 Click [Start] → [Settings] → [Control Panel].

4 Double-click the [System] icon.

The [System Properties] window appears.

5 Click the [Advanced] tab and click [Startup and Recovery].

The [Startup and Recovery] window appears.
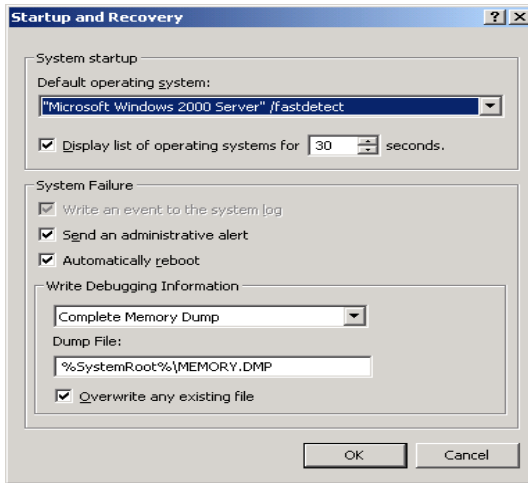
6 Set as follows:

1. In the [Write debugging information] section, select the memory dump file type.
   - Small memory dump (2MB or more)
     Minimum information is recorded to the memory dump file.
     Each time a fatal error occurs, a new file is created in the directory specified in [Small dump directory].
   - Kernel memory dump
     Only kernel memory is recorded to the memory dump file.
   - Complete memory dump (Recommended)
     The whole system memory information is recorded to the memory dump file.

2. In [Dump file] or [Small dump directory], specify the directory to save the memory dump file, with its full path.
   In case of kernel memory dump or complete memory dump, if [Overwrite any existing file] is checked, debugging information is overwritten to the specified file every time.

7 Click [OK] to close the [Startup and Recovery] window.

8 Click [OK] to close the [System Properties] window.

9 Restart the system.

The setting is enabled after the system is restarted.

■ Paging File Setting

Set up the paging file according to the following procedures:

1 Log on to the server with administrator privileges.

2 Check free space of the drive where the system is installed.
Check the required amount of free space according to "■ Checking Hard Disk Free Space"
(→pg.138). If the drive has no free space, refer to "■ Cannot Collect the Memory Dump"
(→pg.277).

3 Click [Start] → [Settings] → [Control Panel].

4 Double-click the [System] icon.
The [System Properties] window appears.

5 Click the [Advanced] tab and click [Performance Options].
The [Performance Options] window appears.
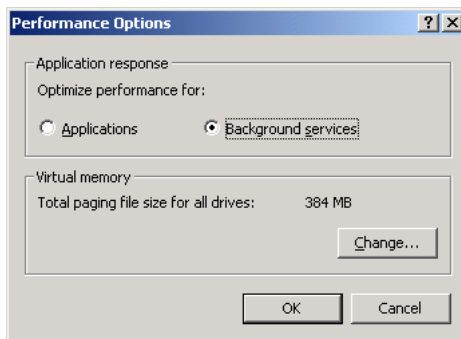
6 Click [Change] in the [Virtual memory] section.
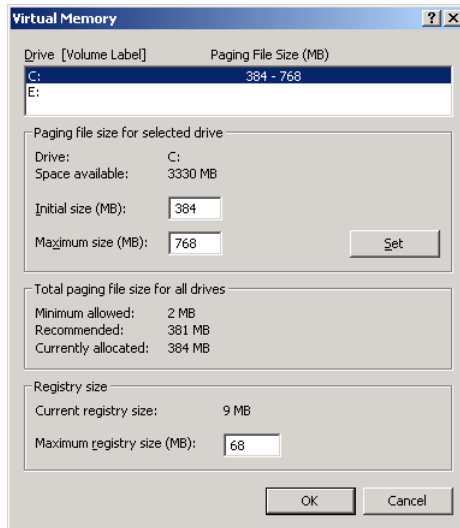
The [Virtual Memory] window appears.

7 Specify the drive where the paging file is to be created.

In [Drive], select the drive where the system is installed.

The selected drive is displayed in [Drive] in [Paging file size for selected drive].

8 Specify the [Initial size].

The value depends on the type of the set dump file.

Specify a value larger than the value shown in [Recommended] in [Total paging file size for all drives].

IMPORTANT

▶ When a smaller value is specified for the paging file size, performance may be affected. We recommend to specify the paging file size larger than the recommended value.

9 Specify the [Maximum size].

Specify a value larger than the [Initial size].

10 Save the settings.

Click [Set] in the [Paging file size for selected drive] section.

The settings are saved, and the value specified is displayed in [Paging File Size] of [Drive].

11 Click [OK] to close the [Virtual Memory] window.

12 Click [OK] to close the [Performance Options] window.

13 Click [OK] to close the [System Properties] window.

14 Restart the system.

The setting is enabled after the system is restarted.

5.2 Creating a Disk for System Recovery

If the installation of the OS was performed manually, create a system recovery disk.

POINT

▶ If the system file, system configuration or environment setting change at startup, etc., are damaged, such data can be reconstructed using the recovery information stored in the created system recovery disk.

▶ To create a recovery disk, you need an unused formatted floppy disk. Prepare it in advance.

5.2.1 Creating the Automated System Recovery (ASR) Set For Windows Server 2003

After setting up Windows Server 2003, create a system recovery set. To do this, you need an unused formatted floppy disk and a medium to store back up files.

1 Click [Start] → [All Programs] → [Accessories] → [System Tool] → [Backup].
The [Backup or Recovery Wizard] window appears.

2 Click [Next].
The [Backup or Recovery] window appears.

3 Select [Create a backup of files and settings], and then click [Next].
The [Items to Create Backups] window appears

4 Select [All the information in this computer], and then click [Next].
The [Backup Type, Destination and Name of the Backup File] window appears.

5 Specify name and destination of the backup file, and then click [Next].
The [Backup or Recovery Wizard Complete] window appears.

6 Click [Finish].
Backup process starts.

7 If a message prompting you to insert a floppy disk appears, insert the floppy disk and click [OK].
Automated system recovery disk is created.

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8 When the process is completed, a message appears. Eject the floppy disk according to the message and put a label on it.

Label Example: "Windows Automated System Recovery Disk: Backup.bkf, Created at 12:00 04/01/2003"

9 Click [OK] to exit [Backup Utility].

10 Click [Close] to close the [Backup Progress] window.

An automated system recovery set has been created.

Store the automated system recovery set just created in a secure location.

5.2.2 Creating a System Recovery Disk For Windows 2000 Server

After setting up Windows Server 2000, create a system recovery disk. To do this, you need an unused formatted floppy disk.

1 Put a label showing "Windows 2000 system recovery disk" onto a floppy disk and insert it into the floppy disk drive.

2 Click [Start] → [Programs] → [Accessories] → [System Tools] → [Backup].

The backup window appears.

3 Click the [Wizard] tab and click [System Recovery Disk].

Create a system recovery disk by following the window instructions.

5.3 Storing the System Configuration Information

Before starting operations, store the configuration information of the BIOS setup utility. By storing this information, the system can be recovered with the stored information in case of a system failure (such as when the information is deleted due to the drain of the built-in battery). Use Server Management Tools for storing and recovering the system configuration information.

IMPORTANT

▶ Since the system configuration information is significant in maintaining the server, be sure to store the BIOS information after the following operations:

• When the information is changed with the BIOS setup utility

• When the hardware configuration of this server is changed (e.g. CPU, memory, baseboard or expansion card is added/removed or changed)

▶ As the stored system configuration information will be used during maintenance, etc., send it to your maintenance personnel.

■ Preparation for Using Server Management Tools

Before using Server Management Tools, prepare the "Server Management Tools" disk supplied with the server at hand.

■ Cautions

• Server Management Tools are for this server only. Do not use those tools on other systems. Otherwise, the system may be corrupted.

• Only the information that is configured with the BIOS setup utility can be stored/recovered with Server Management Tools. The BIOS information in internal SCSI devices or expansion cards cannot be stored/recovered.

• Make sure to start up the server with the "Server Management Tools" disk before running Server Management Tools. Do not run Server Management Tools on the server started from the hard disk or by the other floppy disks. Otherwise, the system may be corrupted.

• Do not eject a floppy disk while the floppy disk access LED is on. Such an action may lead not only to corruption of the floppy disk data but also an unstable state of the system.

• If an error message appears while running Server Management Tools, respond to the message according to "■ Server Management Tools Error Messages" (→pg.273).

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Operations after OS Installation

5.3.1 How to Store the BIOS Information

Store the BIOS information according to the following procedures.

IMPORTANT

▶ Before starting the operation, if the "OS Boot Monitoring" function of ServerView is enabled, disable it
(it is disabled by default).
 If you start up the system while the "OS Boot Monitoring" function remains effective, the operation of
the server may become unpredictable at such times as an abrupt power interruption or restart.
If it is necessary to operate the server with the "OS Boot Monitoring" function enabled, enable the
function after storing the BIOS information.
For details of ServerView, refer to "ServerView User's Guide".
▶ You cannot save the set values of the BIOS setup utility in the following location. Write them down
beforehand.
  • Information under [Main] menu → [Boot Option] submenu → [Boot Sequence]

1 Turn on the server and insert the "Server Management Tools" disk into the
floppy disk drive.

2 When the DOS promptwindow appears, enter the following command and
press the [Enter] key.
    A:\SMTOOL\>biossave.bat

IMPORTANT

▶ If storing has already been performed with Server Management Tools, the stored file must exist
in the floppy disk. In this case, overwriting the file may lead to incompletion of BIOS information
recovery. Move the file to another floppy disk, rename the file or delete, or it by executing the
following command.
 A:\SMTOOL\>deldat.bat [Enter]

3 If the BIOS information is stored correctly, the following message appears.

```
Success!
```

Storing procedure is completed. The server can now be turned off safely.

5.3.2 How to Recover the BIOS Information

If the information configured with the BIOS setup utility was deleted due to a drain of the built-in server battery, etc., restore the BIOS information according to the following procedures.

IMPORTANT

▸ Do not turn off the server during a program run.

▸ Before starting up the system by inserting the "Server Management Tools" disk, check that the "OS Boot Monitoring" function of ServerView is disabled (it is disabled by default).
If you start up the system while the "OS Boot Monitoring" function remains effective, the operation of the server may become unpredictable at such times as an abrupt power interruption or restart. If the server is operated with the "OS Boot Monitoring" function enabled, enable the function again before resuming operation. For details of ServerView, refer to "ServerView User's Guide".

1 Turn on the server and insert the "Server Management Tools" disk into the floppy disk drive.

2 When the DOS prompt window appears, enter the following command and press the [Enter] key.
   A:\SMTOOL\>biosrest.bat

3 If the BIOS information is restored correctly, the following message appears.

```
Success!
```

4 The BIOS information will be enabled after the next system restart. Restart the server.
Perform Step 1 to display the DOS prompt window. The restoration procedure has been completed. The server can now be turned off safely.

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5.4 Creating Maintenance Tools

This section explains how to create tools for maintaining the server.
Maintenance tools are created with the FloppyBuilder function of ServerStart.

With the FloppyBuilder function of ServerStart, you can create the following tools:

- DOS floppy disks
- Hardware Configuration Tools (such as Server Management Tools)

The FfloppyBuilder can be used under environments such as:

- the ServerStart system started on a client computer (recommended)
- the system started on the server using the ServerStart CD-ROM

○POINT

▶ When creating the tools on a client computer, it is necessary to install ServerStart on the client computer beforehand. Install it according to "2.4 Preparation for Using ServerStart on a Client Computer" (→pg.54).
If ServerStart of a different version is installed in the computer, make sure to uninstall the ServerStart. Then perform installation again. For details on how to uninstall ServerStart, refer to "2.4.2 Uninstalling ServerStart" (→pg.57).

IMPORTANT

▶ The FloppyBuilder function may not operate correctly if you start up ServerStart while ServerStart of a different version is installed in the computer. Make sure to uninstall a different version of ServerStart.

5.4.1 Creating a DOS Floppy Disk

For DOS data stored into the floppy disk, refer to the file in the following folder of the ServerStart CD-ROM.
[CD-ROM drive] :\FreeDOS
To create a DOS floppy disk, you need an unused floppy disk. Prepare it in advance.
If ServerStart has already been started, it is not necessary to restart it. If it has not, start it up according to the following procedures:

■ Starting ServerStart

● When Creating a DOS Floppy Disk on a Client Computer

For Windows 2000 Professional/Windows XP Professional, and if the contents of the ServerStart CD-ROM has been copied to the computer

1 Click [Start] → [Programs] → [Fujitsu ServerStart] → [ServerStart].

ServerStart starts up and the [Welcome to ServerStart] window appears.

For Windows NT, or if the ServerStart CD-ROM has not been copied to the computer

1 Insert the ServerStart CD-ROM into the client computer's CD-ROM drive.

ServerStart starts up and the [Welcome to ServerStart] window appears.
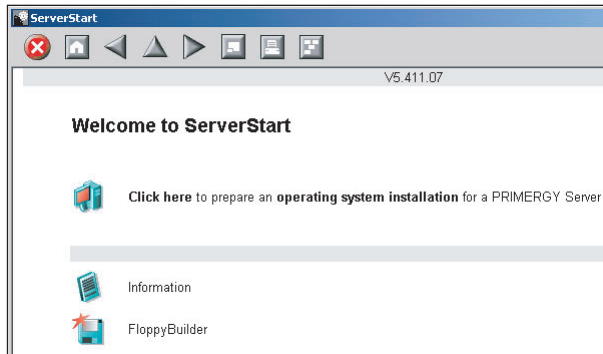
● When Creating a DOS Floppy Disk on the Server

1 Turn on the server and insert the ServerStart CD-ROM immediately after that.

ServerStart starts up and a message appears prompting you to insert the ServerStart floppy disk.

2 Insert the attached "ServerStart floppy disk" into the server's floppy disk drive. Then make sure "Removable media" and "A:" are selected and click [Create].

A network setup window for remote installation appears.

POINT

▶ If a configuration file already exists in the ServerStart floppy disk and [OK] is clicked without clicking [Create], the [ServerStart Unattended Mode] window appears. Make sure to click [Exit]. The [Welcome to ServerStart] window appears.
If [Start] is clicked in the [ServerStart Unattended Mode] window, the installation of the server will start and all disk contents will be deleted.

3 Click [OK].

The [Initializing ServerStart] window appears and unattended installation will be started. Depending on the hardware configuration, this process may take a few minutes. When the process is completed, the [Create a ServerStart Floppy Disk] window appears.

4 Click [or Insert a ServerStart Floppy Disk to Start ServerStart].

The [Welcome to ServerStart] window appears.

5 Eject the ServerStart floppy disk.

■ Creating a DOS Floppy Disk

Start up ServerStart and confirm that the [Welcome to ServerStart] window is displayed.

1 Click [FloppyBuilder].

The [ServerStart FloppyBuilder] window appears.
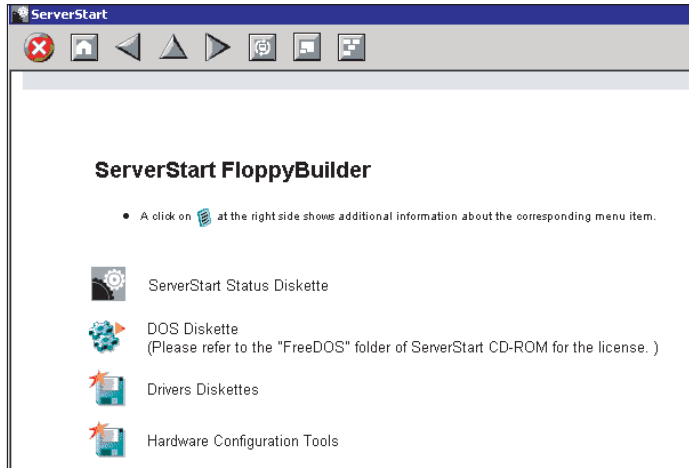
2 Click [DOS Diskette].

Insert the prepared floppy disk by following the message.

3 Perform the subsequent operations according to the messages on the window.

The floppy disk will be formatted automatically and file copying will start.

The DOS floppy disk will be created automatically.

When a message appears indicating that the disk is created, click [OK] and eject the disk.

5.4.2 Creating a Hardware Configuration Tool

This section explains how to create a Hardware Configuration Tool from the ServerStart CD-ROM.

Prepare floppy disks as many as the tools you want to create beforehand.

Types of a Hardware Configuration Tool vary by model.

1 Start up ServerStart and click [FloppyBuilder].

For details on procedures for starting up ServerStart, refer to "■ Starting ServerStart" (→pg.149).

2 Click [Hardware Configuration Tools].

3 Click the tool you want to create.

Insert the prepared floppy disk by following the message.

4 Perform the subsequent operations according to the messages on the window.

The floppy disk will be formatted automatically and file copying will start.

The respective tools will be created automatically. When a message appears indicating that the disk is created, click [OK] and eject the disk.

5.5 Notes Before Operating the Server

This section explains the settings required before starting to operate the server.

For the respective settings, refer to "First Step Guide".

- If a LAN card was added, install a driver according to "4.3 Installing the LAN Driver" (→pg.127).
- When connecting a SCSI optional device (such as a hard disk cabinet or DAT), connect it according to "Chapter 7 Installing Hardware Options" (→pg.173).
- For the settings for the installed applications supplied with the product, refer to the manuals of each application.

5.5.1 Updating the System

■ Windows Update

The system being used must be updated to prevent potential problems in the system.

Executing Windows Update can automatically search the latest version of QFE applicable to the OS and update the system to the latest status. Execute Windows Update periodically.

Executing Windows Update requires a network environment connectable to the Internet.

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5.5.2 Auto-run Function from CD-ROM Drives

Perform the following procedures to change the settings of the auto-run function from the CD-ROM drives after server installation:

1 Make the registry editable, and change the value of AutoRun of the following registry key:
  HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\CDRom
To enable auto-run, set the value of Autorun to "1", and to disable auto-run, set the value to "0".

2 Restart the system.
The setting is enabled after the system is restarted.

5.5.3 Drive Letter Assignment in Expert Mode

In expert mode, you cannot specify a drive letter to a particular partition arbitrarily. Drive letters specified with Disk Manager in expert mode will be sequentially assigned from the first partition with "C, D, E..." when installation is completed, and an unused drive letter will be assigned to the CD-ROM drive.
To change the drive letter, perform the following procedures after installation.

⚠️IMPORTANT

▶ You cannot change the drive letters for the system and boot drive.

■ For Windows Server 2003

1 Click [Start] → [Administrative Tools] → [Computer Management].

2 Click [Disk Management].

3 Right-click the partition to change the letter and click [Change Drive Letter and Path].
The [Change Drive Letter and Path] window appears.

4 Click [Edit].
The [Change Drive Letter or Path] window appears.

5 Change the drive letter.

■ For Windows 2000 Server

1 Right-click [My Computer] icon on the desktop and select [Manage].

2 Click [Disk Management].

3 Right-click the partition to change the letter and select [Change Drive Letter and Path].

The [Change Drive Letter and Path] window appears.

4 Click [Edit].

The [Change Drive Letter or Path] window appears.

5 Change the drive letter.

5.5.4 Notes on Advanced Uninterruptible Power Supply (UPS)

Note the following points when using an advanced uninterruptible power supply (referred to as UPS afterward).

■ UPS Shutdown Time Setting

Specify enough time for the UPS power-off time (time from the shutdown direction to the actual power-off). If this time is set insufficiently, the power will be cut off before system shutdown, which may result in destruction of data. For more details, refer to the manuals for UPS and UPS management software.

■ Power Supply Control by UPS

Change BIOS settings as follows to power the server on automatically using the UPS management software (PowerChute Network Shutdown, PowerChute Business Edition) at power recovery or during scheduled operation. For details on how to set the BIOS Setup Utility, refer to "8.2 BIOS Setup Utility" (→pg.231).

1 Start the BIOS Setup Utility.

2 From the [Advanced] menu, select the [Power On/Off] submenu and press the [Enter] key.

The [Power On/Off] submenu window appears.

3 Set the [Power Failure Recovery] to [Always On].

→"8.2.9 Power On/Off Submenu" (pg.243)

5.5.5 Turning the Power On via a LAN

You can turn the power on the server from a client (via a LAN) by utilizing the Wakeup on LAN (WOL) function.

IMPORTANT

▶ Be sure to install ServerView to control the power supply via a LAN.

POINT

▶ When the power cable is disconnected from the server or the server is powered off due to power interruption, restart the server. Unless the server is restarted, the WOL function will be disabled.

▶ Only the onboard LAN supports the WOL function on this server. Make sure you connect the onboard LAN to a control power supply via a LAN.

■ BIOS Setup Utility Setting

When power management is performed via a LAN, configure the settings as follows using the BIOS Setup Utility. This is set to "Enabled" by default.

1 Start the BIOS Setup Utility.

"8.2.1 Starting and Exiting the BIOS Setup Utility" (→pg.231)

2 From the [Advanced] menu, select the [Power On/Off] submenu and press the [Enter] key.

The [Power On/Off] submenu window appears.

3 Set [Power On Source: LAN] to [Enabled].

→"8.2.9 Power On/Off Submenu" (pg.243)

POINT

▶ To start up the server via a LAN, refer to "● Performing Remote Installation" (→pg.46).

5.5.6 Other Notes on Operation

■ Unnecessary Files

After OS installation is completed, folders named Runonce and Runonce 2 may be left in the drive where the OS is installed. Delete these folders since you do not need them for the system operation.

■ Notes on 24-hour Operation

● Automated System Operation

To provide an extra margin of safety against unintentional damage, introduce disaster-prevention measures in the office and keep disaster prevention personnel (such as a security guard or janitor) in the building.

● Unintentional Power-off Prevention

We recommend the installation of a special power supply device (such as a distribution board) to prevent unplanned power shut-offs.

5.6 LAN Driver Advanced Setup [BACS]

BACS is an integrated GUI application consisting of programs such as BASP (Broadcom Advanced Server Program) that provides the load balancing feature, etc., by teaming up multiple adapters. BACS is used in the following situations:

- Setup a VLAN using the onboard LAN
- Perform the other advanced setups of the onboard LAN

POINT

Use of Intel® PROSet

▶ Use Intel® PROSet (→pg.160) to perform the following advanced setups of a LAN card:
  - Use the Teaming function between LAN cards or between a LAN card and the onboard LAN
  - Setup a VLAN using a LAN card
  - Use the Jumbo frame with a LAN card
  - Perform the other advanced setups of a LAN card

5.6.1 BACS Installation

If the OS was installed using ServerStart, "BACS" is already installed with the driver. If the OS was installed manually, BACS will not be installed.
If [Broadcom Control Suite] is not displayed in the [Control Panel], install BACS according to the following installation procedures:

1 Start the following EXE file contained in the ServerStart CD-ROM.
[CD-ROM drive]: \PROGRAMS\GENERAL\Broadcom\MAforS2\setup.exe
The installer starts up.

5

Operations after OS Installation

2 The installer starts up. Proceed the installation by following the window instructions.

When the window below appears during the installation procedure, check [BASP] and click [Next].
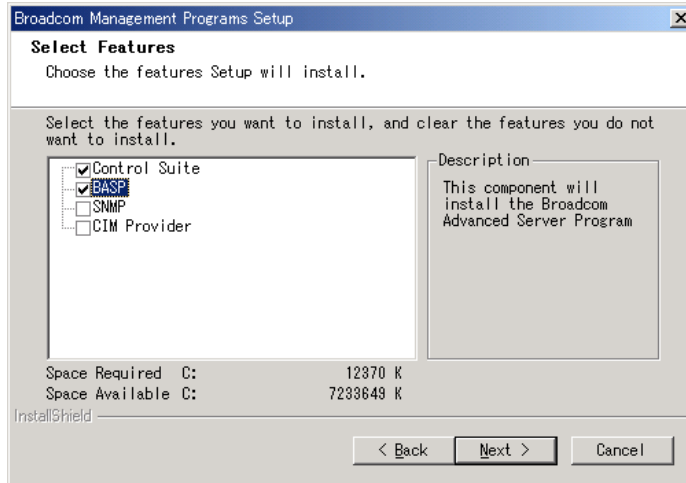
5.6.2 VLAN Setup Procedure

1 Start up BACS. The procedure differs depending on the OS being used.

For Windows Server 2003
1. Click [Start] → [Control Panel] → [Broadcom Control Suite 2].

For Windows 2000 Server
1. Click [Start] → [Settings] → [Control Panel].
   The [Control Panel] window appears.
2. Start up "Broadcom Control Suite 2".

2 Right-click a LAN adapter or the Team name of a Teamed Up adapter and click [Add VLAN] from the displayed menu.
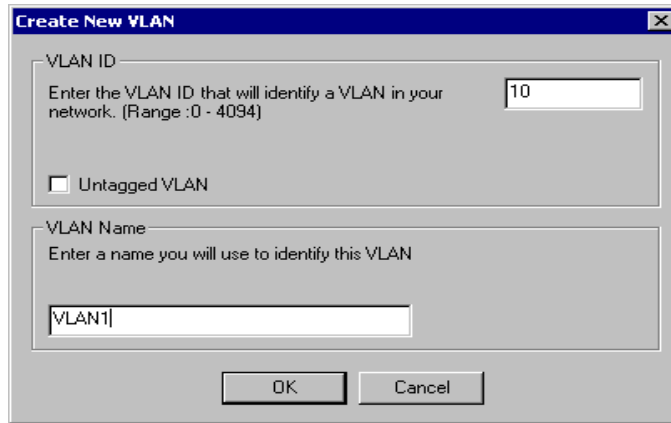
POINT
▸ A LAN adapter is displayed with a 🖫 mark.
▸ The Team name of a Teamed Up adapter is displayed with a 👥 mark.

3 Specify [VLAN ID] and [VLAN Name] in the [Add VLAN] window.

The [VLAN ID] should be identical with the switch setting.

The [VLAN Name] does not need to be identical with the switch setting.

♀POINT

‣ You cannot use a "VLAN ID" or "VLAN Name" that has already been used. Enter another set value.

4 When the setting for the team is completed, click [OK].

5 Click [Apply] to apply the settings.

After the network is temporarily disconnected, a window is displayed. Click [Yes (Y)].

5.7 LAN Driver Advanced Setup [Intel® PROSet]

"Intel® PROSet" is a tool for configuring details on the LAN driver. This is used in the following cases.

- Use the Teaming function between LAN cards or between a LAN card and the onboard LAN
- Setup a VLAN using a LAN card
- Use the Jumbo frame with a LAN card
- Perform the other advanced setups of a LAN card

POINT

Use of BACS

▶ Use BACS (→pg.157) to perform the following advanced setups of the onboard LAN:
- Setup a VLAN using the onboard LAN
- Perform the other advanced setups of the onboard LAN

5.7.1 Intel® PROSet Installation

If the OS is installed using ServerStart, Intel® PROSet is already installed with the driver. If the OS is installed manually, Intel® PROSet will not be installed.

On Windows Server 2003/Windows 2000 Server, if [Intel® PROSet] is not displayed in the [Control Panel], install Intel® PROSet according to the following installation procedures:

1 Start the following EXE file contained in the ServerStart CD-ROM.

For Windows Server 2003
[CD-ROM drive]: \Tools\GENERAL\Intel\ProsetW2k3\Proset.exe

For Windows 2000 Server
[CD-ROM drive]: \Tools\GENERAL\Intel\ProsetW2k\Proset.exe

2 Select [Automatic execution-runs setup immediately] and click [OK].

Perform the subsequent procedures by following the instructions.

5.7.2 Notes on Referring to the Intel® PROSet Help Topics

When referring to help topics, note the following points.

- Do not use the driver downloaded from the Intel Corporation online service page on this server.
- If the descriptions in the help and this manual vary, give priority to this manual.
- The name of LAN cards appears in the help texts corresponds to the cards as follows:

table: LAN cards appear in the help texts

LAN cards appear in the help text	Corresponding LAN cards
PRO/1000 Desktop	PG-1852
PRO/1000 Server	PG-1862/PG-1882/PG-1892
PRO/1000 adapter	PG-1852/PG-1862/PG-1882/PG-1892
PRO/1000 Copper adapter	PG-1852/PG-1862/PG-1892
PRO/1000 Fiber adapter	PG-1882
82540-based adapter	PG-1852

- The controllers of the onboard LAN and LAN cards are as follows:

table: Controller being used

LAN cards	Controller being used
PG-1852	Intel® 82540EM
PG-1862	Intel® 82546EB
PG-1882/PG-1892	Intel® 82545GM

5.7.3 Cautions for PG-1852/1862/188x/189xLAN Driver V8.3

■ Event Log

Once a Team is setup, multiple identical logs from the same source that starts with the following log may be stored in the system log file of the event viewer at system start-up.

Source	iANSMiniport
ID	11
Type	Warning
Description	The following adapter link is not connected: (adapter name) * (adapter name) varies depending on the OS or hardware configuration.

Since such event logs will be stored nonetheless even if the Teaming function is operated normally, ignore them.

5

Operations after OS Installation

5.7.4 Teaming Function

■ Notes

When using the Teaming function, note the following points.
- You require Service Pack 2 or later for Windows 2000 Server.
- For AFT/ALB/FEC/GEC type, you can incorporate up to four LAN ports into one team and two ports for a SFT type team.
- Once a Team is created, virtual adapters (Intel® Advanced Network Service Virtual Adapter) will be created in the [Device Manager] and/or [Network and Dial-up Connections] of the system. Do not disable or delete this virtual adapter from the [Device Manager] or [Network and Dial-up Connections]. When deleting a virtual adapter, make sure to use "Intel® PROSet".
- When the Teaming function is being used, you can only use the following protocols:
  - For AFT/SFT/FEC/GEC type: IP, NetBEUI, IPX (NCP), IPX (NetBIOS)
  - For ALB type: IP, IPX (NCP)
- When the Teaming function is being used, you cannot use the hardware assist function of IPSEC. Do not use this function even if the function is installed in all cards in the team.
- When the Teaming function is being used, you cannot use Windows Load Balancing Service (WLBS) and Network Load Balancing (NLB).
- PG-1852 does not become a member of a Team.
- You can not select FEC/GEC type when Teaming Up the onboard LAN and a LAN card.
- If FEC/GEC type is selected, you can only use the switch for link aggregation.
- When adding/deleting a FEC/GEC type member, perform such operation under a linked down state.

⚠️IMPORTANT

▶ Only a link down error between a LAN card (onboard LAN) and the switch it connects with, and the equivalent errors lead to switching of the route. Therefore, if only the switch or LAN card (onboard LAN) is partially damaged and the route being used is sound at the link level, the route will not be switched in the team, but the communication with the Team may become an error.

■ Teaming Configuration Procedure

1 Start up Intel® PROSet. The procedure differs depending on the OS being used.

For Windows Server 2003
1. Click [Start] → [Control Panel] → [Intel(R) PROSet].

For Windows 2000 Server
1. Click [Start] → [Settings] → [Control Panel].
   The [Control Panel] window appears.
2. Start up "Intel(R) PROSet".

2 Select a card to incorporate in a Team and right-click it.

3 Click [Create New Team] in [Add to Team].
[Teaming Up Wizard] appears.

4 Select a Teaming type with which you want to create a Team.

Select the following depending on the Teaming type selected accordingly:

- AFT type: "Adapter fault tolerance"
- ALB type: "Adaptive load balancing"
- SFT type: "Switch fault tolerance"
- FEC type: "FEC/802.3ad Static link aggregation"
- GEC type: "GEC/802.3ad Static link aggregation"

5 Select a LAN card to incorporate in the Team and click [Next].

6 Click [Finish].

7 Click [OK].

When the Teaming setting is completed, the following virtual adapter will be created.

- "Intel(R) Advanced Network Services Virtual Adapter"

Upper protocols will be bound with the main virtual adapter.

You cannot bind them with the LAN card consisting of a Team.

The IP address can be set in the main virtual adapter.

5.7.5 VLAN

■ Notes

When using a VLAN, note the following points.

- You can only have "NetBIOS over TCP/IP" enabled for up to four VLANs in the whole system.
- On a VLAN, do not use protocols other than TCP/IP.
- You can only set ten or less VLANs to a LAN port.
- When adding or deleting a VLAN, always use "Intel(R) PROSet". Do not disable or delete a VLAN from the [Device Manager] or [Network and Dial-up Connections].

■ VLAN Configuration Procedure

1 Start up Intel® PROSet. The procedure differs depending on the OS being used.

For Windows Server 2003
  1. Click [Start] → [Control Panel] → [Intel(R) PROSet].

For Windows 2000 Server
  1. Click [Start] → [Settings] → [Control Panel].
     The [Control Panel] window appears.
  2. Start up "Intel(R) PROSet".

2 Select a LAN card to setup a VLAN and right-click it.

5

Operations after OS Installation

3 Click [Add VLAN]. The following message may be displayed at the time. In such a case, click [Yes].

```
You need to connect with the switch that supports IEEE
VLANs (802.1Q). Do you want to enable QOS Packet Tagging?
```

4 Specify [ID] and [Name]. Then click [OK].

The [ID] should be identical with the switch setting.

The [Name] does not need to be identical with the switch setting.

5 Repeat Step 3 through 5 to set respective VLANs.

6 Click [OK].

When setup of the VLAN is completed, the following virtual adapter will be created.

• "Intel(R) Advanced Network Services Virtual Adapter"

Upper protocols will be bound with the main virtual adapter. You cannot bind them with the LAN card consisting a VLAN. The IP address should be specified in the main virtual adapter.

5.7.6 Local Address Setting

Specify a local address according to the following procedures:

1 Start up Intel® PROSet. The procedure differs depending on the OS being used.

For Windows Server 2003

    1. Click [Start] → [Control Panel] → [Intel(R) PROSet].

For Windows 2000 Server

    1. Click [Start] → [Settings] → [Control Panel].

        The [Control Panel] window appears.

    2. Start up "Intel(R) PROSet".

2 Select a LAN card to set the local address and click [Advanced] tab.

3 Specify a local address in [Locally Managed Address].

5.7.7 Jumbo Frame

1000BASE-T/1000BASE-SX supports Jumbo frame. When using Jumbo frame, construct the Jumbo frame network using only devices that support Jumbo frame and apply the settings that will enable Jumbo frame.
Configure setting for Jumbo frame according to the following procedures.

1 Start up "Intel(R) PROSet" from [Control Panel].

2 Select a LAN card to perform configuration and click [Advanced] tab.

3 Specify the maximum frame size in [Jumbo Frame] tab.

■ Other Cautions

You cannot connect devices directly with a cross cable without connecting a hub switch or router in between.

Chapter 6

High Reliability Tool

For stable PRIMERGY server operations, we
recommend that high reliability tools be installed.
This chapter explains the installation and
necessary settings of high reliability tools.

6.1 RAID Management Tool [Global Array Manager]

RAID Management Tool is software that perform array configuration, disk initialization and disk array monitoring when using RAID card. For more details, refer to "PRIMERGY ServerBooks" supplied with the server, and "Supplement" supplied with options.

POINT

Batch installation using ServerStart

▶ If the OS is installed using ServerStart, RAID Management Tool is batch installed with the OS and other high reliability tools. If manually installing the OS, install RAID Management Tool manually.

6.1.1 Installing RAID Management Tool (Global Array Manager)

To Install RAID Management Tool individually using the standard installer, follow the procedures below.

IMPORTANT

▶ Before performing Global Array Manager, check that TCP/IP is installed and works properly.

1 Log on to the server with administrator privileges.

IMPORTANT

▶ Exit all programs before starting installation.
Installation will fail if "Event Viewer" or "Computer Management" is run.

2 Insert the ServerStart CD-ROM. Click [Start] → [Run...].

3 Enter a name in the [Open:] field as follows and click [OK].

[CD-ROM drive]: \PROGRAMS\GENERAL\LSI\GAM\install.bat

Installation starts and the wizard window appears.

For subsequent procedures, refer to "PRIMERGY ServerBooks" supplied with the server, and "Supplement" supplied with options.

■ When an error screen appears after installation (Windows Server 2003 only)

If Windows Server 2003 Service Pack 1 is applied, when restarting after installing/uninstalling RAID Management Tool (Global Array Manager) the following message may appear.

```
In order to protect the computer, this program is terminated by
Windows.
Name: SNMP Service
```

There is no problem with operations. Click [Close Message] to close the message.

6.1.2 Settings when using RAID Management Tool in Linux

When using RAID Management Tool in a Linux environment, after installing Global Array Manager, use the following procedures to change the GAM Server service activation sequence. When Linux is a bundle type perform settings changes.

₽POINT

- ▶ Log in with "root".
- ▶ This setting is necessary when the GAM version is "6.02-18". If the GAM version is unknown, check as shown below using the rpm command.

```
# rpm -q gam-server
gam-server-6.02-18
```

1 Edit "/etc/init.d/gam" in the text editor.

Using the vi command etc., change the chkconfig setting at located at the start of the file.

```
# vi /etc/init.d/gam
# chkconfig: 2345 40 60
                 ↓Change
# chkconfig: 2345 99 60
```

2 Reflect the changed settings.

Execute the following commands and after temporarily deleting the GAM Server service re-attach it.

```
# chkconfig --del gam
# chkconfig --add gam
```

3 Check if the changed settings are reflected correctly.

Execute the following commands and check if the service is "on" in run level 2 to 5.

```
# chkconfig --list gam
gam  0:off  1:off  2:on  3:on  4:on  5:on  6:off
```

6

High Reliability Tool

6.2 Server Monitoring Tool [ServerView]

ServerView constantly monitors the status of the servers' hardware in the network and provides a console with which the administrator can check the status of all the servers at a glance. In addition, if an error occurs, the administrator will be notified in real-time to take immediate action.

■ Installing ServerView

● When Installed Using ServerStart

If the OS is implemented and setup using ServerStart, ServerView will be installed at once with the OS and other high reliability tools.

● When Installed Manually

Perform installation referring to "Chapter 2 Installing" in "ServerView User's Guide".

● For Linux

ServerView cannot be installed using ServerStart. To install ServerView into a Linux system, refer to "ServerView User's Guide".

IMPORTANT

▶ Be sure to install SNMP service before installing ServerView.

■ When an error screen appears after ServerView installation (Windows Server 2003 only)

If Windows Server 2003 Service Pack 1 is applied, when restarting after installing/uninstalling ServerView the following message may appear.

```
In order to protect the computer, this program is terminated by
Windows.
Name: SNMP Service
```

There is no problem with operations. Click [Close Message] to close the message.

■ Setting Required after Installation

Perform necessary operations after ServerView installation referring to "2.4 Checking after Installation" in "ServerView User's Guide".

■ Boot Monitoring Setting

We recommend enabling the "Boot Monitoring" function after ServerView is installed. For setting procedures and explanation on the function, refer to "[Restart Settings] Tab" of "3.2.4 Serious Error Handling" in "ServerView User's Guide".

■ Notes on Using the Console Redirection Function

When performing console redirection using ServerView RemoteControleService in this server, connect UPS and external modem devices to serial connector 2 (COM2). For details about RemoteControleService functions refer to "Chapter 5 Using RemoteControleService" in the "ServerView User's Guide".

6

High Reliability Tool

6.3 Solving Problems Early [DSNAP]

DSNAP is a tool for collectively acquiring failure investigation information such as server environment information.

POINT

Batch installation using ServerStart

▶ If the OS is installed using ServerStart, DSNAP are batch installed with the OS and other high reliability tools. If manually installing the OS, install DSNAP manually.

■ Installing DSNAP

When installing DSNAP separately, copy the "DSNAP.EXE" file stored in the "\PROGRAMS\Japanese\DSNAP" folder of the ServerStart CD-ROM into the server's hard disk.

■ How to Use

This topic is discussed in the "\PROGRAMS\Japanese\DSNAP\README.TXT" file in the ServerStart CD-ROM. Use a text editor to open it.

Chapter 7

Installing Hardware Options

This chapter explains how to install and remove the various hardware options.

7.1 Before Installing Hardware Options

The following types of hardware options can be installed in this server.

5 inch storage bay
(internal 5 inch SCSI option)

Memory

Expansion card

CPU

3.5 inch storage bay
(internal hard disk unit)
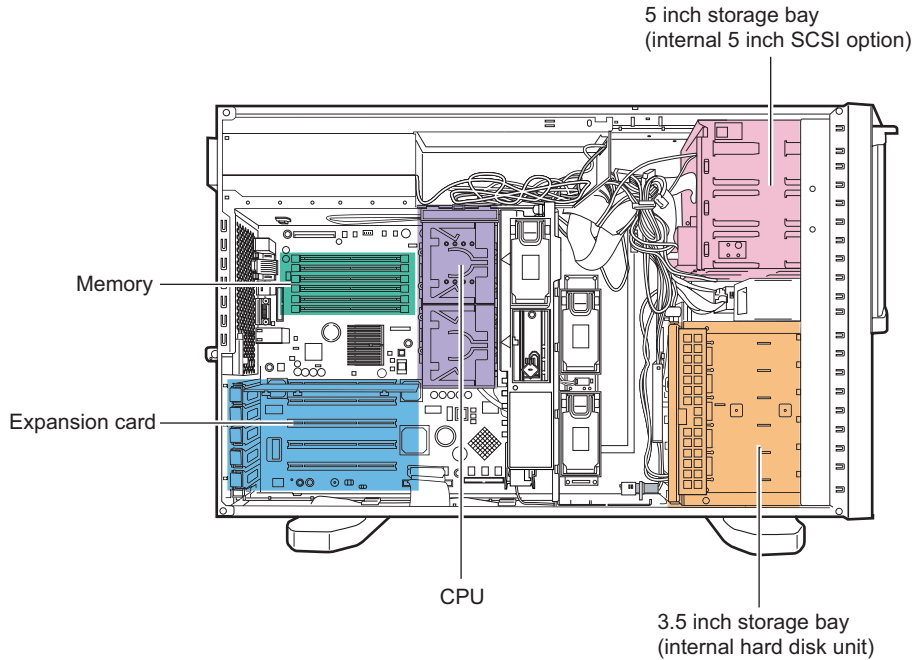
POINT

▶ If devices listed below are optionally purchased, refer to the following to check the packaged items before installing.
  - CPU→"B.1 CPU" (pg.302)
  - Memory→"B.2 Memory" (pg.302)
  - Internal Hard Disk Units →"B.3 Internal Hard Disk Units" (pg.303)
  - Internal hard disk unit bay conversion kit→"B.4 Internal Hard Disk Unit Bay Conversion Kit" (pg.303)
▶ When installing and removing options, make sure to use the removed screws on the same devices that were last installed or removed. Failure to do so can damage the device.
▶ This manual explains how to install hardware options in a pedestal-type server as an example.
▶ The type of optional devices listed in this manual are liable to be updated without any notice. Please be forewarned.

⚠️WARNING   Electric Shock

- When installing/removing hardware options to/from the server, turn off the server, all peripheral devices, and any other connected devices. Also unplug all power cables from the outlet. Failure to do so can cause electric shock ("1.4.4 Turning Off the Server" (→pg.36)).
- Do not disassemble the PSU. Failure to do so can cause electric shock.

Do not

- Do not install unauthorized third party hardware options. Doing so may cause a device failure, fire, or electric shock.
- Do not damage or modify internal cables or devices. Doing so may cause a device failure, fire, or electric shock.

⚠️CAUTION

- Devices inside the server remain hot after shutdown. Wait for approximately 10 minutes after shutdown before installing or removing hardware options.
- The circuit boards and soldered parts of hardware options are exposed. They can be damaged by static electricity.
  Before handling them, first touch a metal part of the server to discharge static electricity.
- Do not touch the circuitry on boards and soldered parts. Hold the metallic areas or the edge of the circuit boards.
- When installing a 5-inch internal device, make sure to avoid pinching cables.
- If devices are installed other than by the methods outlined in this chapter or disassembled, the warranty will be invalidated.

7

Installing hardware options

7.2 Removing and Attaching Covers

Remove covers to install hardware options. Perform the following procedures to remove covers.

⚠️WARNING | Electric Shock ⚡ | • When removing or attaching covers, turn off the server, all peripheral devices, and any other connected devices. Also unplug all power cables from the outlet. Failure to do so can cause electric shock ("1.4.4 Turning Off the Server" (→pg.36)).

7.2.1 Removing Covers

1 Turn off the server and connected devices, and unplug all power cables from the outlet.

2 Slide the drive cover up.
When the drive cover is locked with the drive cover key, unlock the drive cover before sliding it up.
→"1.4.1 Sliding the Drive Cover" (pg.31)

3 Remove the hard disk cover.
Tilt the hard disk cover toward you and pull it up to remove.
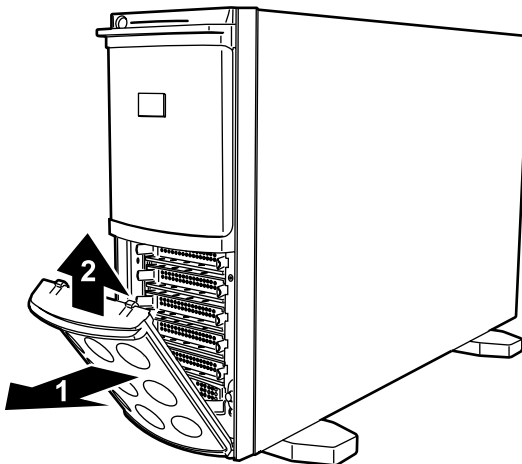
4 Remove the side cover.

    1. Release the side cover lock on the rear side (1) and remove the screw (2).

       Turn the side cover key counterclockwise to unlock the cover.
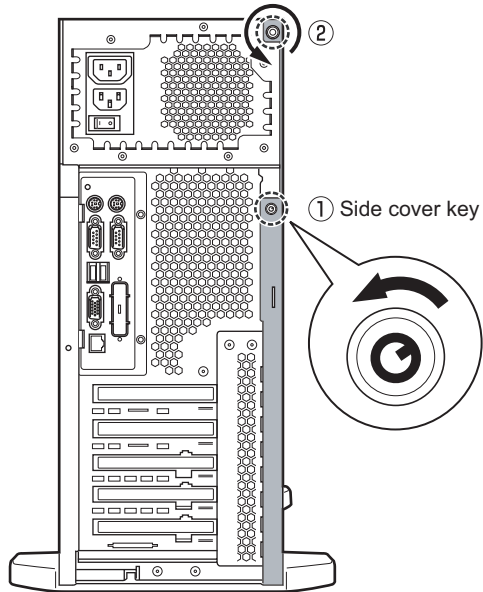
    2. Slowly slide the side cover to the rear side, and then tilt it toward you to remove it from the server.
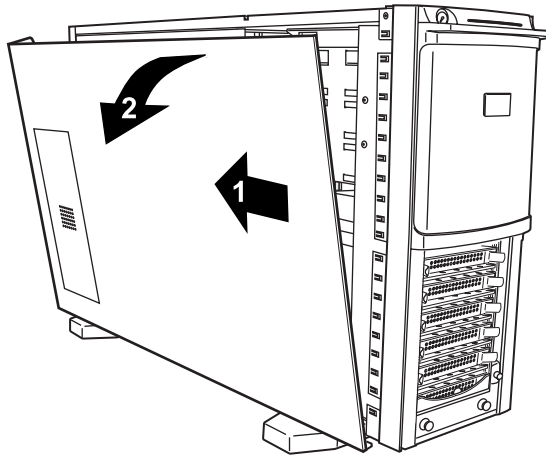
> **5** Remove the front cover.
>
> 1. The front cover is fastened with two stoppers. Pull the stoppers to remove at the bottom of the server.

Stoppers
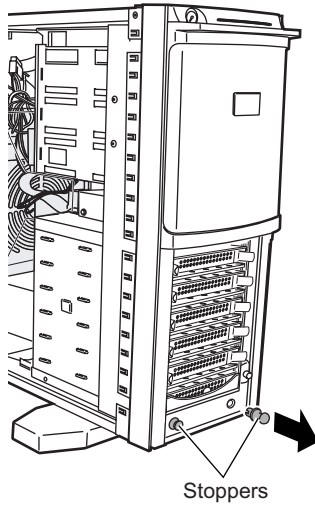
> 2. Lift the front cover upward to remove.
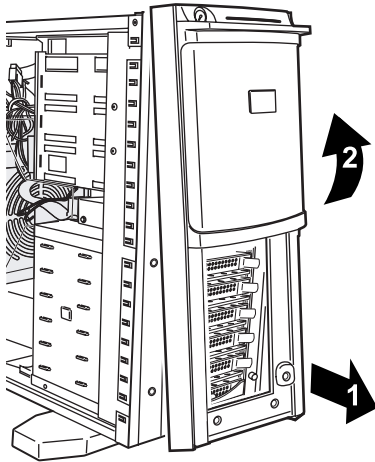
POINT

▸ Remove the front cover as necessary, e.g., when you install a 5-inch internal device.

■ Installing Covers

To attach covers, simply reverse the removal procedures.

⚠CAUTION

• Before turning on the server, make sure that all covers are in place.

• Check to make sure no tools or unnecessary components are left inside the server before attaching the side cover back into place.

POINT

Installing the front cover

▶ When attaching the front cover, insert the intrusion switch on the front side into the hole in the cover. Before attaching, check that the hook on the top is securely hooked.

Insert the switch into the hole
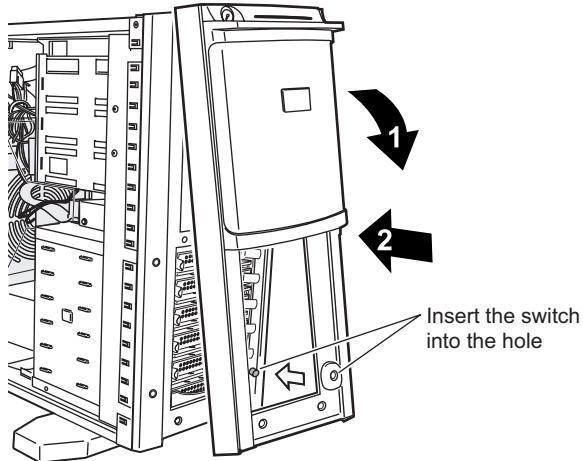
7.2.2 Removing the Top Cover of the Rackmount Type

When the Rackmount Conversion kit for TX200S2 (optional) is used, remove the top cover. The top cover of the rackmount type corresponds to the side cover of the pedestal type.

1 Open the rack door.

→"1.4.2 Opening the Rack Door" (pg.32)

2 Remove all cables connected to the server.

3 Remove the retaining screws used to fasten the server to the rack.
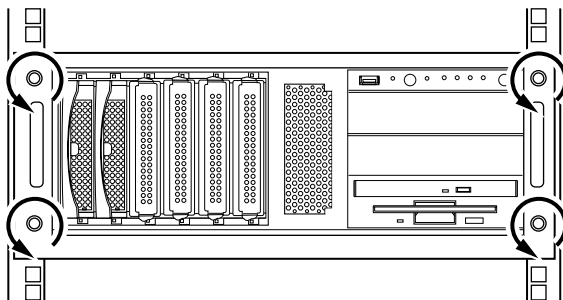
4 Slide the server.

Hold the handles from inside and pull the server out toward you until it clicks, so that it locks in place on the rails on both sides.
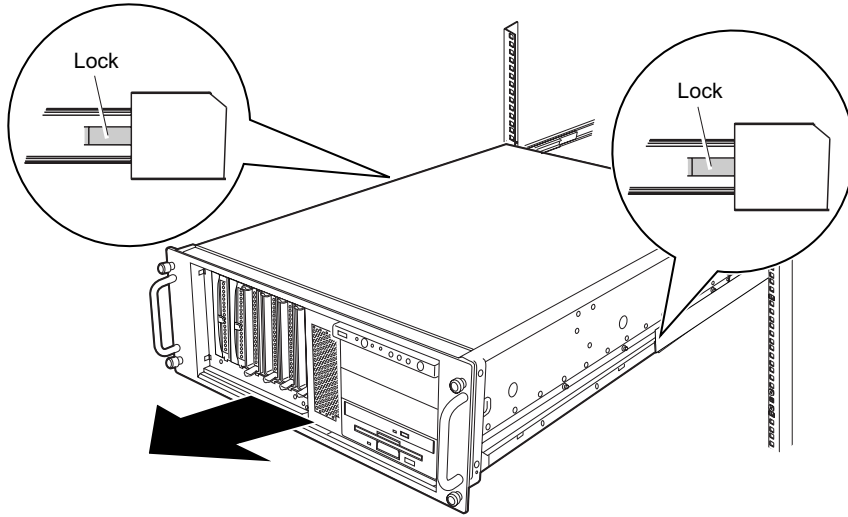
5 Remove the top cover.

The procedures for removing the top cover is the same as that for removing the side cover. Remove the screws on the rear side. Slowly slide the top cover to the rear side, and then remove it from the server.

■ Attaching the Top Cover

To attach the top cover, simply reverse the removal procedures.

⚠CAUTION ⚠

• Before turning on the server, make sure that all covers are in place.

❗

• Check to make sure no tools or unnecessary components are left inside the server before attaching the top cover back into place.

7.3 Installing a CPU

The server can have up to two CPUs by adding an optional CPU.

⚠WARNING Electric Shock • When installing or removing a CPU, turn off the server, all peripheral devices, and any other connected devices. Also unplug all power cables from the outlet.
Failure to do so can cause electric shock.

⚠CAUTION 🚫 • Do not install unauthorized third party CPUs. This could damage the server.
• Do not use CPUs that differ in frequency/cache size. The system may become unable to start up.

⚠ • The circuit boards and soldered parts of hardware options are exposed. They can be damaged by static electricity.
Before handling them, first touch a metal part of the server to discharge static electricity.
• Do not touch the circuitry on boards or soldered parts. Hold the metallic areas or the edge of the circuit boards.

7

Installing hardware options

7.3.1 Where to Install CPUs

Install the CPU sockets in order of socket 0 to 1.

An additional CPU is installed in CPU socket 1. CPU socket 0 is installed with a CPU by default. After installing the CPU, install the CPU fan supplied with the CPU.
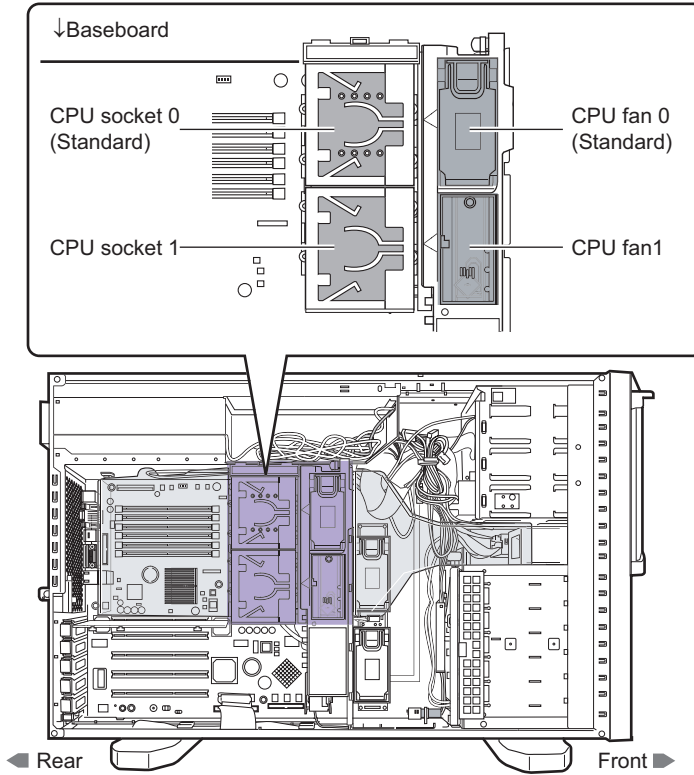
7.3.2 Installable CPUs and Notes

■ Installable CPUs

The following CPUs can be installed in this server.

table: Installable CPUs

Model	Product ID
Processor Xeon 3.0GHz/2MB	PG-FG232
Processor Xeon 3.2GHz/2MB	PG-FG233
Processor Xeon 3.6GHz/2MB	PG-FG234

■ Notes on Installation

The additional CPU must be the same model (with the same frequency/cache size) as the existing CPU.

7.3.3 How to Install a CPU

1 Turn off the server and connected devices, and unplug all power cables from the outlet.

2 Remove the side cover

→"7.2 Removing and Attaching Covers" (pg.176)

3 Touch a metal part of the server to discharge static electricity.

4 Remove the two ventilation system covers.

Ventilation system covers
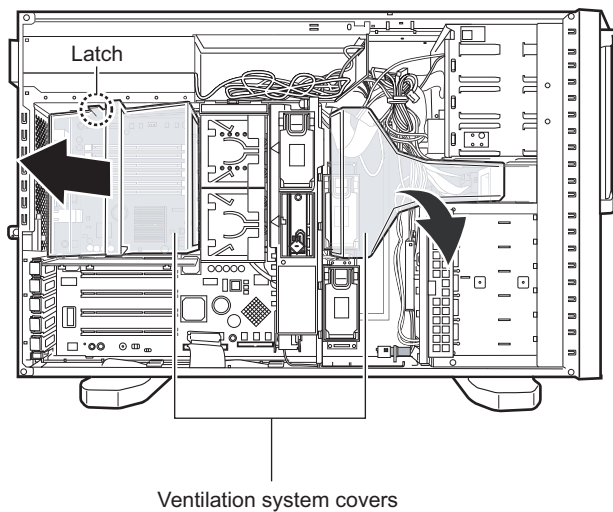
5 Remove the CPU cover.
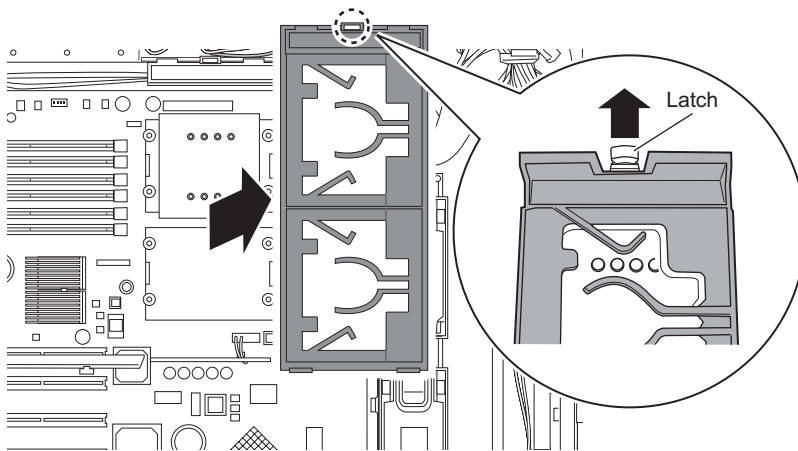
6 Remove the CPU fan holder.

Latch

Latch
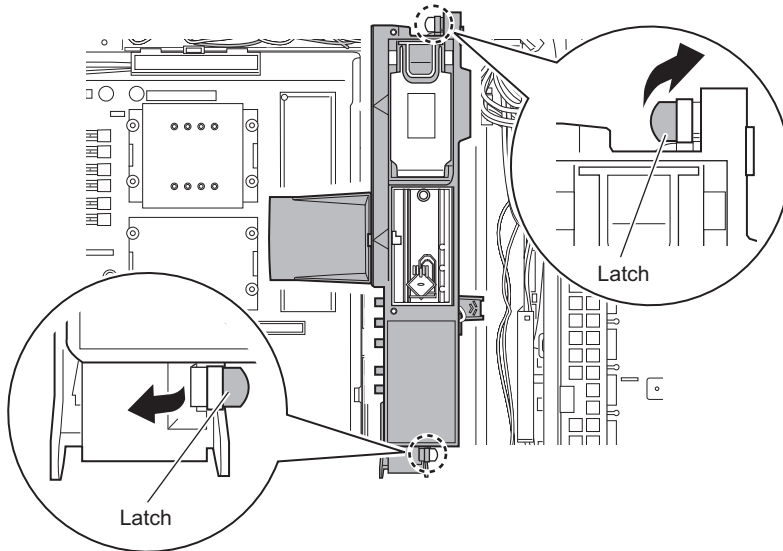
7 Release the lever on the CPU socket.

Pull up to open the socket lever fully. A CPU cannot be installed unless the socket lever is fully open.

Socket lever
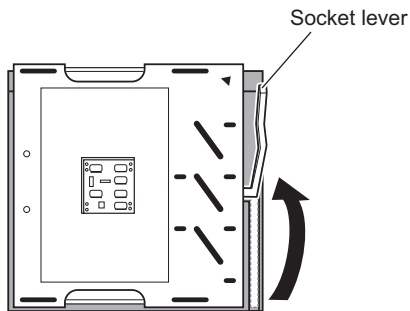
⚠CAUTION ⚠
• The socket lever turns approx. 135 degrees.
Be sure to open the socket lever fully to release it. If the socket lever is not fully open during CPU installation, the CPU may be damaged.

8 Install the CPU.

Align the triangle on the CPU socket (pin 1 marking) with the triangle on the CPU, and insert the pins into the socket. Return the socket lever to the original position.

Pin 1 marking
Socket lever
CPU
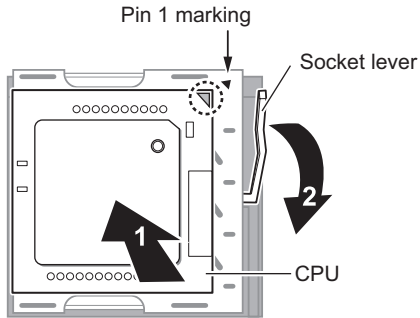
⚠ CAUTION 🛈 • When installing the CPU in the socket, be careful not to bend CPU pins.

9 Install the heat sink.

Attach the heat sink to the installed CPU and fasten it with the screws.
Carefully tighten the screws in diagonal order.

Heat sink
CPU
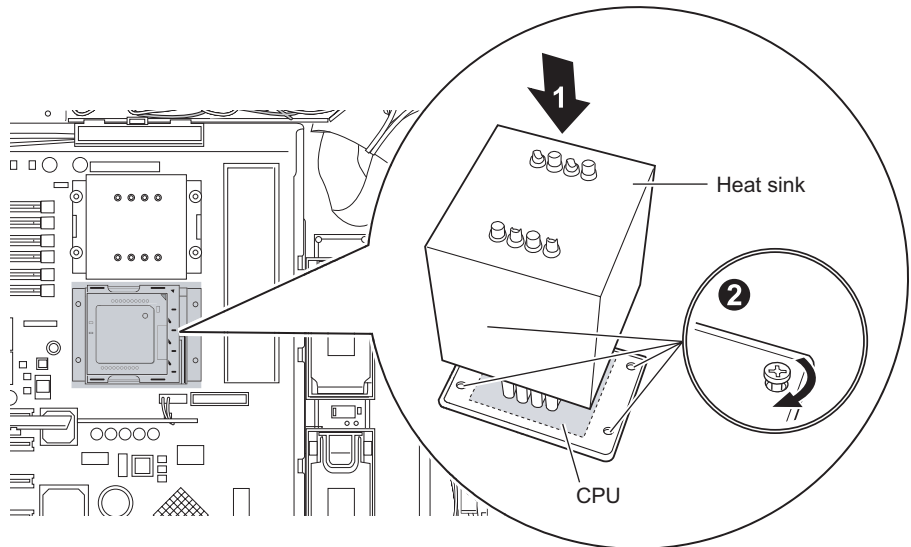
10 Install the CPU fan.

1. Remove the dummy cover from the CPU fan holder.

Dummy cover
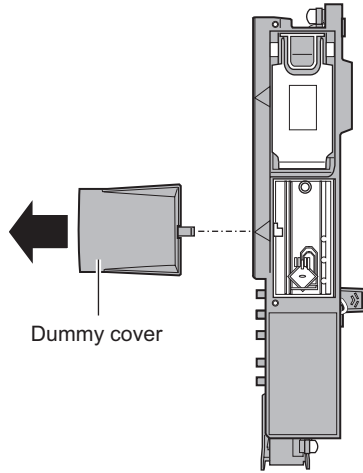
2. Pull the CPU fan lever and install the CPU fan in the CPU fan holder.
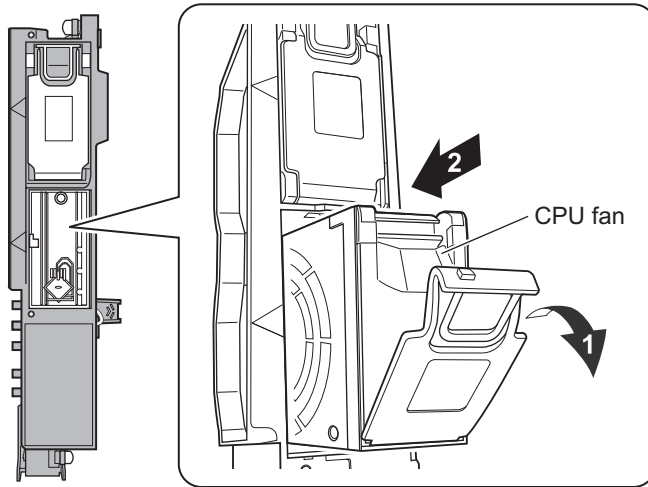
CPU fan

3. Return the lever to fasten the CPU fan.
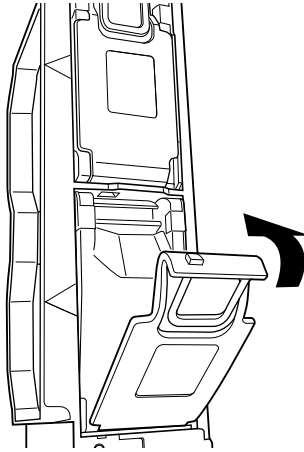
11 Install the CPU fan holder to the server.

To attach it, simply reverse the removal procedure.

⚠CAUTION 🚫　• When installing the CPU fan holder, make sure not to damage the cables.

12 Install the two ventilation system covers.

To attach them, simply reverse the removal procedure.

13 Install the side cover.

14 Turn on the server and start the BIOS Setup Utility. Initialize the Extended System Configuration Data (ESCD) area.

1. Start the BIOS Setup Utility and set [Reset Configuration Data] on the [Advanced] menu to [Yes].
2. From the [Exit] menu, select [Save Changes & Exit] and press the [Enter] key.

15 Store the BIOS settings.

→"5.3.1 How to Store the BIOS Information" (pg.146)

7

Installing hardware options

7.3.4 Defective CPU Disconnection Function

This server is equipped with the defective CPU disconnection function.

This function disconnects the CPU judged to be defective (abnormal) during Power On Self Test (POST) and start the server. On two-CPU servers, if one CPU is defective, the other CPU starts up the server.

The failed CPU can be checked with the information displayed during POST or from the [Server] menu of the BIOS Setup Utility. "■ CPU Status Submenu" (→pg.248)

Replace the defective CPU, if discovered, and then restart the server.

■ Replacing the Defective CPU

Replace the defective CPU with a new one according to "7.3.3 How to Install a CPU" (→pg.183).

◆POINT

▶ After replacing the CPU, start the BIOS Setup Utility and select the [Server] menu → the [CPU Status] submenu to check that [CPU n Status] (n is the number of the replaced CPU) is set to [Enabled]. If the item is set to [Failed], change the setting to [Enabled]. If it is not set to [Enabled], the server will start with the CPU recognized as being defective and constantly disconnected. To use the new CPU, set the item to [Enabled] for releasing the failed CPU status at the next startup.

7.4 Installing Memory Modules

Additional memory will help to increase the amount of data to read at a time and improve the server processing capability.

⚠WARNING

Electric Shock • When installing or removing a memory module, turn off the server, all peripheral devices, and any other connected devices. Also unplug all power cables from the outlet.
Failure to do so can cause electric shock.

Electric Shock • Use our genuine memory modules only.
Failure to do so may cause a device failure, fire, or electric shock.

• Wait for a sufficient period of time after server shutdown before installing or removing memory.
Failure to do so can cause burns.

⚠CAUTION

• When installing or removing memory, make sure to remove the screws on the specified points only. There is a chance of injury if screws other than those on the specified points are removed. This could also damage the server.

• Touch only the specified part of the printed circuit board.
This could cause injury. This could also damage the server.

• Memory modules are made of delicate components that are extremely sensitive to static electricity, and they can be destroyed by static electricity from your clothes or body. Before handling them, first touch some metallic object to discharge static electricity.

• Do not insert and remove memory modules repeatedly. This could damage the server.

• As shown in the figure below, hold the edges of the memory module. Do not touch the gold contacts.

Do not touch this part.
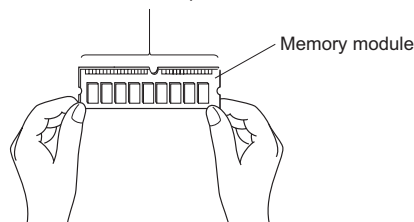
Memory module

7.4.1 Where to Install the Memory Module

Install memory modules to the memory slots in the server.

One memory bank consists of Slots A and B in this server. To add more memory, install a pair of memory modules, each having the same capacity, to the corresponding slots in the sequence of Bank 2, Bank 1, and Bank 0.
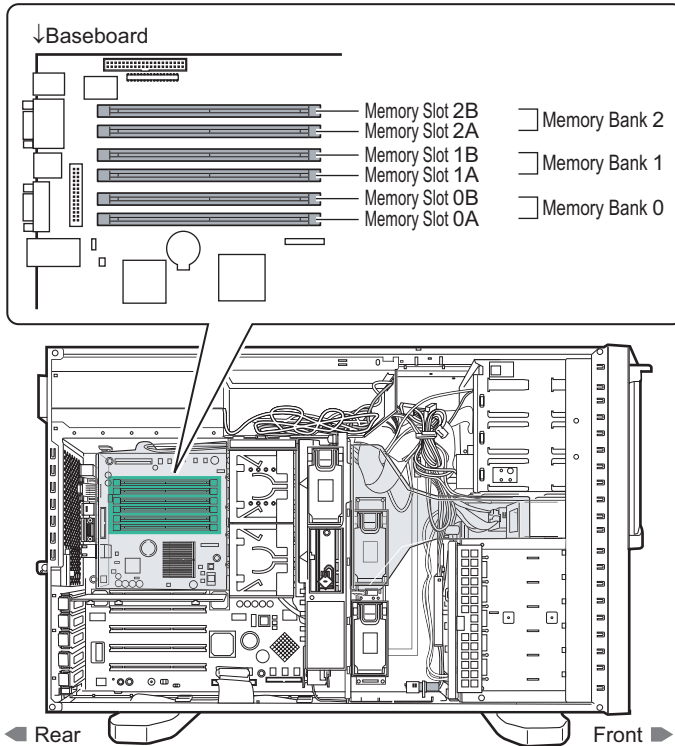
- Bank 2: For basic RAM modules or memory modules that can be installed with the basic RAM module conversion kit.
- Banks 0 and 1: For add-on RAM modules.

7.4.2 Installable Memory Modules and Notes

■ Installable Memory Modules

The following memory module types can be used in this server.

table: List of Usable Memory Modules

Model	Remarks
Memory Module-512MB (PG-RM51AE)	512MB (256MB-DIMM x 2)
Memory Module-1GB (PG-RM1AE)	1GB (512MB-DIMM x 2)
Memory Module-2GB (PG-RM2AE)	2GB (1GB-DIMM x 2)

■ Notes When Installing Memory

The memory used in this server is composed of a pair of DIMM. Make sure to install a pair of DIMMs, each having the same capacity.

● Identifying Memory Modules

Check that the number beginning with "CA" (e.g., CA05946-E101) printed on the label is same on the two DIMMs. Be sure to use a pair of modules with the same number. If the DIMMs have identification labels, be sure to install a pair of DIMMs with the same capacity with the label placed on the same location.

• Identification label location
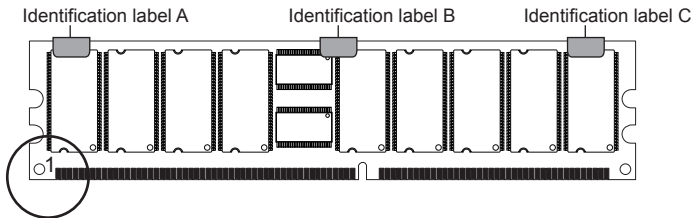
• Identification label patterns
  When a memory module is viewed so that the corner circled in the above figure comes to the lower left, identification labels are applied in any of the following patterns.

table: Identification Label Patterns

Pattern	Label A	Label B	Label C
1	Not applied	Not applied	Not applied
2	Applied	Not applied	Not applied
3	Applied	Applied	Not applied
4	Not applied	Not applied	Applied
5	Applied	Applied	Not applied
6	Applied	Not applied	Applied
7	Not applied	Applied	Applied
8	Applied	Applied	Applied

7

Installing hardware options

7.4.3 How to Install Memory Module

1 Turn off the server and connected devices, and unplug all power cables from the outlet.

2 Remove the side cover.
→"7.2 Removing and Attaching Covers" (pg.176)

3 Touch a metal part of the server to discharge static electricity.

4 Remove the ventilation system cover above the memory slots.
Release the latch on the ventilation system cover and lift it up to remove.
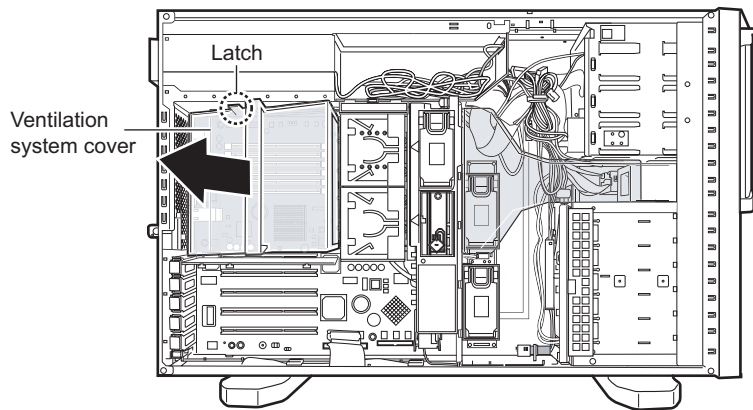
5 To replace the memory module, open outward the retention clips on both sides of the slot.
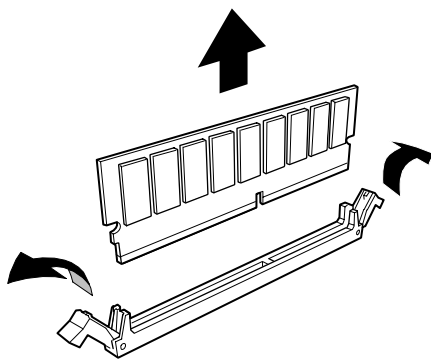
⚠CAUTION ⚠ • Make sure not to open the clips outward too quickly because the memory module may pop up, which could cause damage.

6 Open the retention clips on both sides of the slot and insert the memory module.

Align a notch of the memory module to correspond with the memory slot and insert the module perpendicularly to the slot.

When the module is correctly inserted, the retention clips on both sides will close. Then, check that they secure the memory module.

If the retention clips are not securely closed, push them with your fingers to close.

Align notch
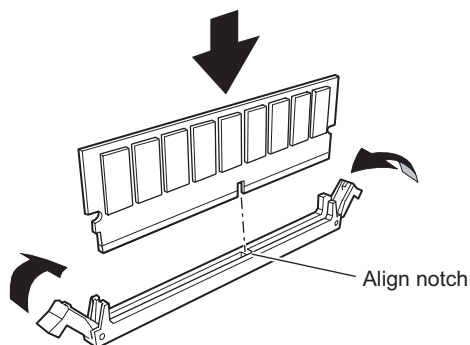
⚠CAUTION ⚠ • An improperly engaged memory module could cause a fire. Do not insert the memory module on the wrong side.

7 Attach the ventilation system cover.

To attach it, simply reverse the removal procedures.

8 Attach the side cover.

9 Turn on the server and start the BIOS Setup Utility. Initialize the Extended System Configuration Data (ESCD) area.

1. Start the BIOS Setup Utility and set [Reset Configuration Data] on the [Advanced] menu to [Yes].
2. From the [Exit] menu, select [Save Changes & Exit] and press the [Enter] key.

10 Store the BIOS settings.

→"5.3.1 How to Store the BIOS Information" (pg.146)

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Installing hardware options

7.4.4 Defective Memory Disconnection Function

This server is equipped with the defective memory disconnection function.
This function disconnects the memory judged to be defective (abnormal) during Power On Self Test
(POST) to start the server. When POST is executed, if the memory capacity is discovered to be smaller
than the capacity of the memory installed, there is a possibility of memory defect.
You can check the slot whose memory is defective from the system event log.
Replace the defective memory, if discovered, and then restart the server.

■ Replacing the Defective Memory

1 Check the slot whose memory is defective from the system event log.
→"9.3 System Event Log" (pg.280)

2 Replace the defective memory with a new one according to "7.4.3 How to
Install Memory Module" (→pg.192).

3 Turn on the server and start the BIOS Setup Utility.
→"8.2.1 Starting and Exiting the BIOS Setup Utility" (pg.231)

4 Select the [Memory Status] submenu from the [Server] menu and check that
[Memory Module nn] (nn is the number of the replaced memory module) is set
to [Enabled].
If the item is set to [Failed], change the setting to [Enabled].
"■ Memory Status Submenu" (→pg.248)

> ▶ If it is not set to [Enabled], the server will start with the memory module recognized as being
> defective and constantly disconnected. To use a new memory module, set the item to
> [Enabled] for releasing the failed memory status at the next startup.

7.5 Installing an Expansion Card

This section explains the types of expansion card, notes and installation procedures.

⚠WARNING

Electric Shock
- When installing or removing an expansion card, turn off the server, all peripheral devices, and any other connected devices. Also unplug all power cables from the outlet.
  Failure to do so can cause electric shock.
- Install our genuine expansion cards only.
  Failure to do so may cause a device failure, fire, or electric shock.

- Wait for a sufficient period of time after server shutdown before installing or removing expansion cards.
  Failure to do so can cause burns.

⚠CAUTION

- When installing or removing expansion cards, make sure to remove the screws on the specified points only.
  There is a chance of injury if screws other than those on the specified points are removed. This could also damage the server.

- Touch only the specified part of the printed circuit board.
  Failure to do so could cause injury and also damage the server.
- Do not touch metal fixings of the main board on the rear side of the server. This could cause injury. This could also damage the server.

- Expansion cards are made of delicate components that are extremely sensitive to static electricity, and they can be destroyed by static electricity from your clothes or body. Before handling them, first touch some metallic object to discharge static electricity.

7

Installing hardware options

7.5.1 Where to Install an Expansion Card

The server has five PCI slots to accommodate up to five expansion cards.

◀ Rear   Front ▶

↓Baseboard

PCI slot 5 (32bit33MHz)
PCI slot 4 (64bit133MHz)
PCI slot 3 (64bit133MHz)
PCI slot 2 (64bit100MHz)
PCI slot 1 (64bit100MHz)
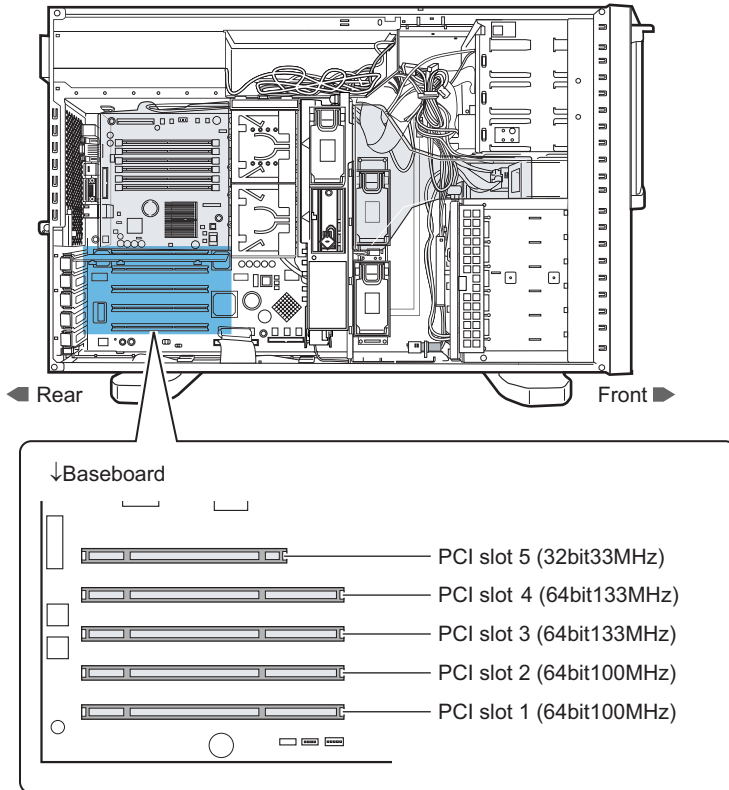
POINT

▸ The clock frequency depends on the number and specifications of the expansion cards installed.
▸ Only slot 5 is mounted on the PCI board.

7.5.2 Installable Expansion Cards and Notes on Installation

■ Installable Expansion Cards

Up to five expansion cards listed on the following table can be installed in the server.

table: List of Installable Expansion Cards

Installable card (Model name)	Number of cards		Remarks
Remote Service Board (PG-RSB103)	1	1	
RAID Ctrl 0-Channel 128MB w/ BBU (PG-140D1)	1	1	For internal array system (Ultra 320 0ch SCSI)
RAID Ctrl 2-Channel 128MB w/ BBU (PG-142E3)	2	4	For internal/external array systems (Ultra 320 2ch SCSI)
SCSI Ctrl U160 (PG-128)	2		For internal/external SCSI devices (Ultra 160 SCSI)
Fibre Channel Controller (PG-FC106)	2		
Eth. Ctrl 1000-BASE-T Cu (PG-1892)	4	4	1000BASE-T
Eth. Ctrl 1000-BASE-SX Fibre LC (PG-1882)	2		1000BASE-SX
Eth. Ctrl 1000-BASE-T Cu (PG-1852)	3		1000BASE-T
Eth. Ctrl 2x1000-BASE-T Cu (PG-1862)	2		1000BASE-T

■ Order of Expansion Card Installation

Install expansion cards into the slots in accordance with the priority indicated in the following table.

IMPORTANT

▶ Follow the "Installation order" shown in the table when installing the cards and drivers. If you turn on the power after installing multiple expansion cards simultaneously or in a wrong order, they will not function properly.

table: Expansion Card Installation Order and Slots

Installable expansion card (Model name)	PCI slot					Installation order
	1	2	3	4	5	
Remote service board (PG-RSB103)	-	-	-	-	1	1
RAID Ctrl 0-Channel 128MB w/ BBU (PG-140D1)	1	-	-	-	-	2
RAID Ctrl 2-Channel 128MB w/ BBU (PG-142E3)	1	2	3	4	-	3
SCSI Ctrl U160 (PG-128)	1	2	3	4	-	4
Fibre Channel Controller (GP-FC106)	3	4	1	2	-	5
Eth. Ctrl 1000-BASE-T Cu (PG-1892)	3	4	1	2	-	6
Eth. Ctrl 1000-BASE-SX Fibre LC (PG-1882)	3	4	1	2	-	7
Eth. Ctrl 1000-BASE-T Cu (PG-1852)	2	3	4	5	1	8
Eth. Ctrl 2x1000-BASE-T Cu (PG-1862)	3	4	1	2	-	9

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Installing hardware options

■ Notes on Installing Expansion Cards

- Install installable expansion cards only.
- Before installing an expansion card, refer to "PRIMERGY ServerBooks" supplied with the server, and "Supplement" supplied with options. Also, check the following for respective expansion cards.

● Points to Note when Installing RAID Card (PG-140D1/PG-142E3)

- Connection of a SCSI device
  Connect the SCSI device supported by this server. Operations are not guaranteed when an unsupported SCSI device is connected. For details about connection patterns, refer to "■ Connections" (→pg.209).
- Precautions before OS installation
  In addition to the completion of RAID card configuration, the hard disk under the RAID card must be initialized or the background initialization process must be started before the OS is installed. When the OS is installed using ServerStart, ServerStart performs configuration and hard disk initialization automatically.
- Installation locations
  If the hard disk unit where the OS is installed is connected to the RAID card, install the RAID card in Slot 1.
- PCI slot settings
  When connecting to an external SCSI device (when not connecting with an internal hard disk unit) after installing the RAID card (PG-140D1/ PG-142E3), set the following BIOS setting to "Disabled" (Set to "Disabled" at time of purchase).
  However, when a RAID card (PG-140D1/PG-142E3) has been installed to PCI slot 1 and connecting to the internal hard disk units, select BIOS setup utility "Advanced" menu → "PCI Configuration" sub menu → "PCI slot 1 Configuration Option ROM SCAN" to change the setting to "Enabled". For more details, refer to "8.2.7 PCI Configuration Submenu" (→pg.240).
  When the configuration for connecting to the internal hard disk has been selected after the RAID card was installed on an array type or customized type, the BIOS settings of PCI Slot 1 are set to "Enabled" at the time of purchase.

● **When a RAID Ctrl 2-Channel 128MB w/ BBU (PG-142E3) is Installed and an Internal Hard Disk Unit is Connected**

When connecting to the internal hard disk after installing the RAID Ctrl 2-Channel 128MB w/ BBU (PG-142E3), it is necessary to reconnect the SCSI cable of the internal hard disk from the onboard connector to the RAID card. Refer to the following connection diagram and reconnect the SCSI cable after installing the expansion card.
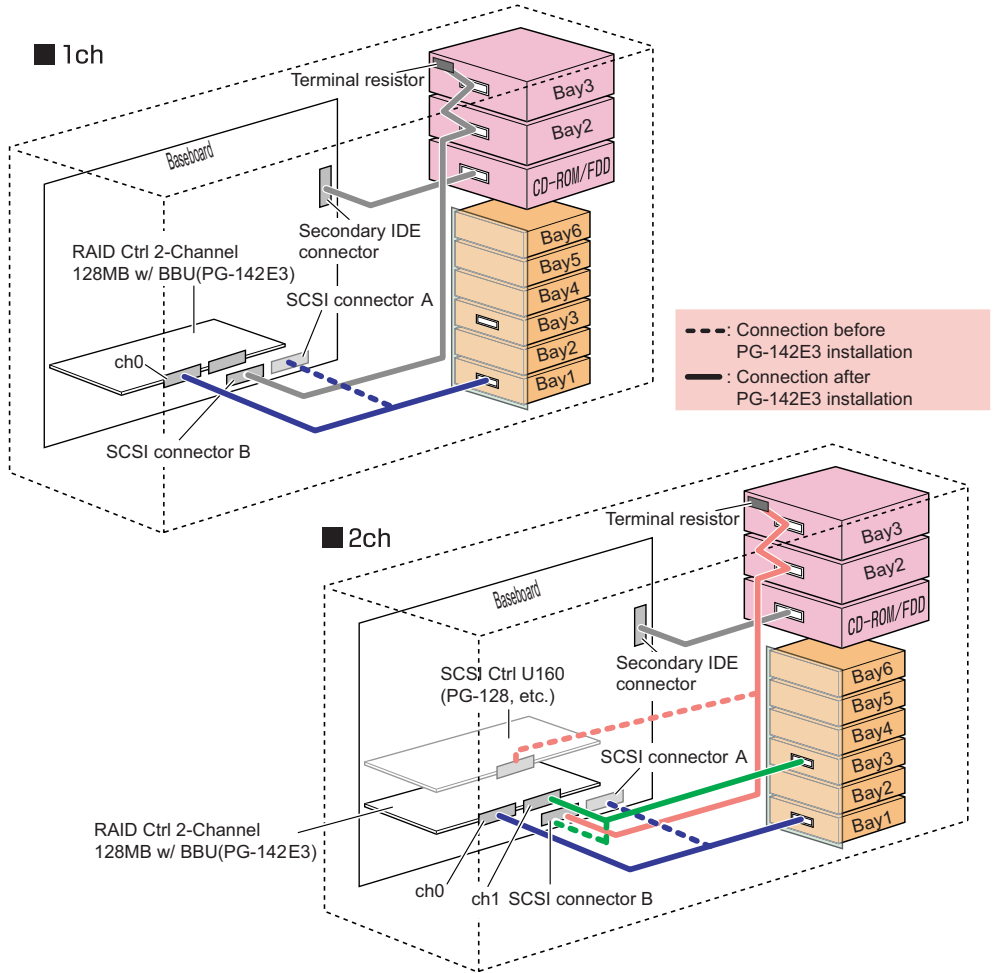
● When the Eth. Ctrl 1000-BASE-T Cu (PG-1852) is Installed in Slot 5

Before installing the Eth. Ctrl 1000-BASE-T Cu (PG-1852) in Slot 5, remove the cover from the Eth. Ctrl 1000-BASE-T Cu (PG-1852).
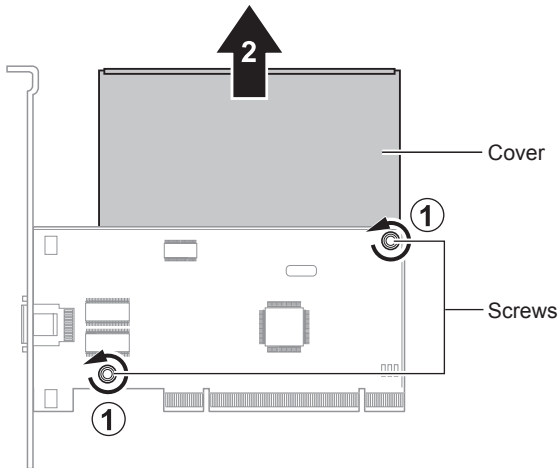
When installing the card to the PCI board, use the four stoppers to fasten the card.

IMPORTANT

▶ For the driver installation procedure, refer to README.txt supplied with the driver.

■ Installing the Remote Service Board

● Notes Before Installing

When installing the remote service board, note the following points:

⚠WARNING

Electric Shock • Do not connect the remote service board AC adapter until you finish installing the remote service board and attaching all the server covers. Failure to do so may cause a device failure, fire, or electric shock.

• When replacing remote service boards or adding other optional devices, unplug the power cable of the remote service board AC adapter from the outlet before operation. Failure to do so may cause a device failure, fire, or electric shock.

● **Connecting the Server Control Cable and Internal Power Cable**

When installing the remote service board, the server control cable and internal power cable need to be connected.

Connect the cables that came with the remote service board as shown in the figure below: the server control cable and internal power cable connected to the ports on the remote service board and the ports on the baseboard respectively. Then install the remote service board in PCI Slot 5.

[Remote service board]
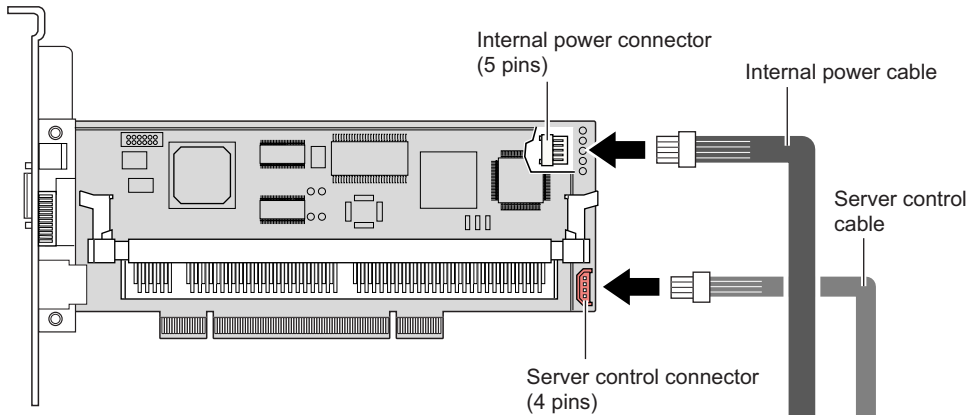
[Baseboard]
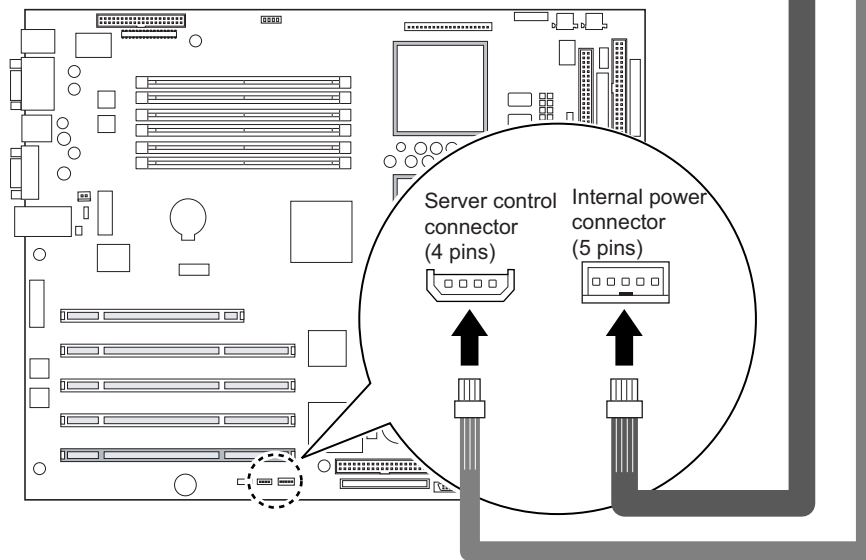
After attaching the side cover of the server, connect the following cables. For how to connect cables, refer to "PRIMERGY ServerBooks" supplied with the server, and "Supplement" supplied with options.

- USB cable
- VGA branch cable
- LAN cable
- AC adapter

 POINT

▸ To make it easier to connect the server control cable into the server control port, apply pressure from the cable side to the port side.

 IMPORTANT

▸ To use the remote service board, ServerView is required. Be sure to install it. For how to install ServerView, refer to "6.2 Server Monitoring Tool [ServerView]" (→pg.170). For the remote service board functions, refer to "ServerView User's Guide."
▸ When the remote service board is connected, the monitor brightness may become lower. In this case, adjust the monitor for higher brightness.
▸ The recommended screen refresh rate for the monitor is 70Hz. In case of poor resolution of the monitor display, set the screen refresh rate to 70Hz.

7.5.3 How to Install an Expansion Card

1 Turn off the server and connected devices, and unplug all power cables from the outlet.

2 Remove the side cover.

→"7.2 Removing and Attaching Covers" (pg.176)

3 Touch a metal part of the server to discharge static electricity.

4 Push the slide lock to the left and remove the slot cover.

When installing a card in Slot 5, remove the PCI board.
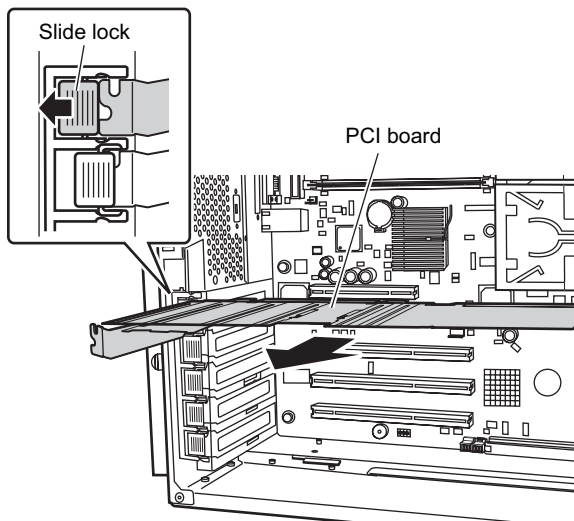
 POINT

▸ Be sure to keep the removed slot cover or dummy cards for later use.
  If operating the server with no expansion card, attach the slot cover to keep dust away.

5 When installing a card in Slot 5, remove the dummy card from the PCI board and install the expansion card to the PCI board.

   1. Lift the stopper latches or slightly bend the PCI board outward to remove the PCI dummy card.

Lift stopper latches

PCI dummy   PCI board
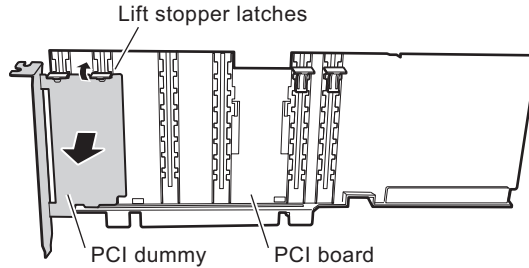
   2. Slide to remove the stoppers.

Note:
Stoppers do not slide upward.
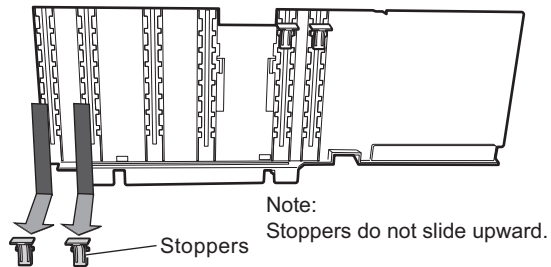
Stoppers

   3. Install the expansion card to the PCI board and fasten it with stoppers.
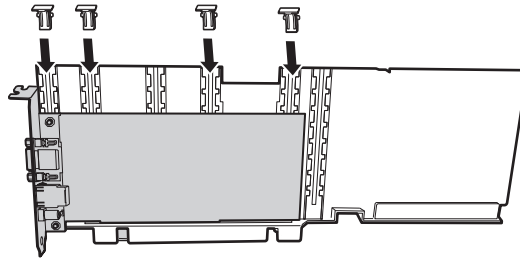
POINT

▶ Use stoppers in four of six locations depending on the card.

6 Firmly press the expansion card into the connector of the PCI slot and put the slide lock back in place to lock.
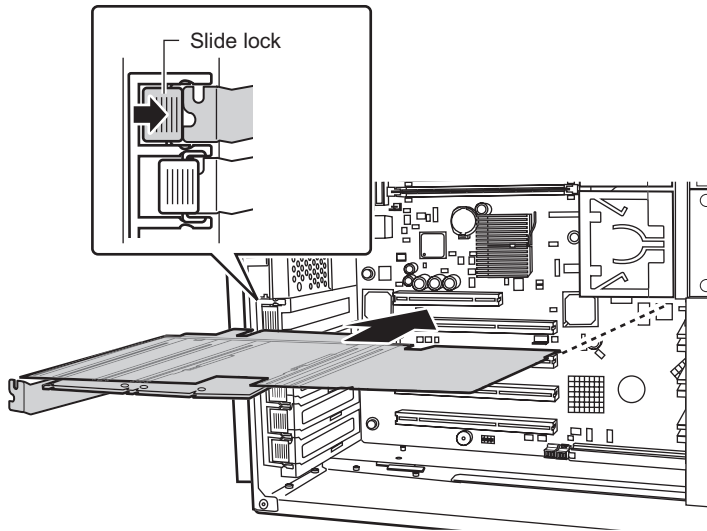
7 Attach the side cover.

■ Removing the Expansion Card

To remove the expansion card, simply reverse the installation procedures.

7.6 Installing Internal Hard Disk Units

This section explains how to install internal hard disk units.

⚠WARNING

Electric Shock

• When installing or removing internal hard disk units, turn off the server, all peripheral devices, and any other connected devices. Also unplug all power cables from the outlet.
  Failure to do so can cause electric shock.

• Install our genuine internal hard disk units only. Failure to do so may cause a device failure, fire, or electric shock.

⚠CAUTION

• When installing or removing hardware options, make sure to remove the screws on the specified points only.
  There is a chance of injury if screws other than those on the specified points are removed. This could also damage the server.

• Touch only the specified part of the printed circuit board.
  Failure to do so could cause injury and also damage the server.

IMPORTANT

▶ Before adding an internal hard disk unit, install the OS and turn off the server.

7

7.6.1 Where to Install Internal Hard Disk Units

Install internal hard disk units in 3.5-inch storage bay.

By, installing the optional internal hard disk unit conversion kit, it becomes possible to convert a 5 inch storage bay to a 3.5 inch storage bay.
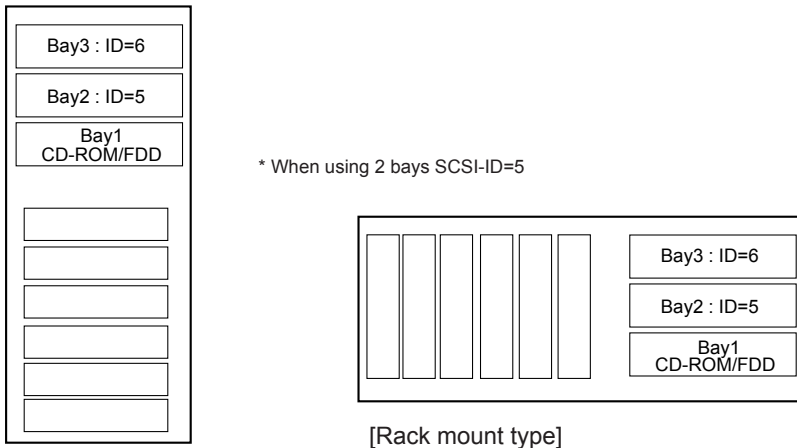
→"7.7.4 How to Install the Internal Hard Disk Unit Bay Conversion Kit" (pg.220)

IMPORTANT

▶ When the Upgrade kit 6 hard disks 2 channel (2x3) is used, the internal hard disk unit bay conversion kit cannot be installed.

[Inside]

5 inch storage bay

3.5 inch storage bay
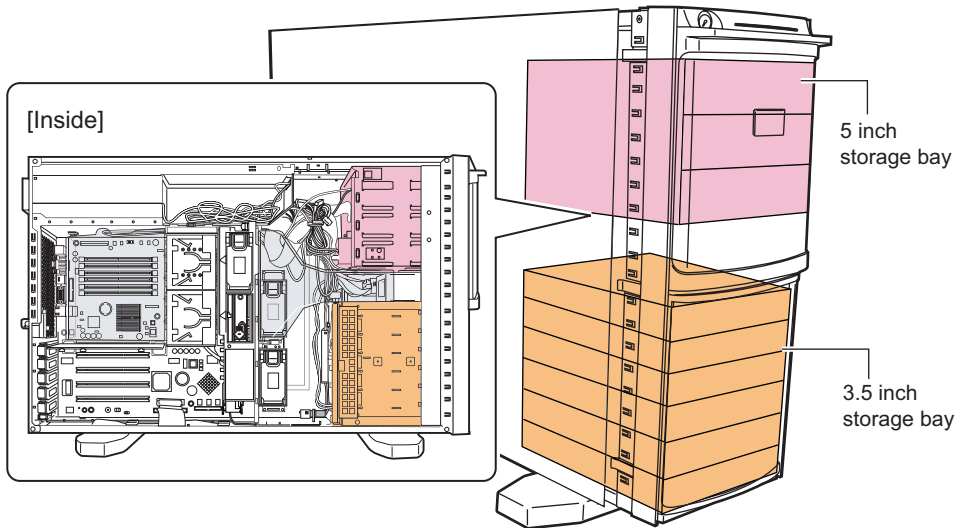
7.6.2 Installable Internal Hard Disk Units and Notes

Before installing an internal hard disk unit, check the following points.

■ Installable Internal Hard Disk Units

The following types of SCSI hard disks can be installed in this server.

table: Installable Internal Hard Disk Units

Disk capacity	Model number	Overview
73.4GB	PG-HDH71K	Ultra320 SCSI, 10,000rpm
73.4GB	PG-HDH75K	Ultra320 SCSI, 15,000rpm
146.8GB	PG-HDH41K	Ultra320 SCSI, 10,000rpm
300GB	PG-HDH31K	Ultra320 SCSI, 10,000rpm

■ Notes

Note the following points to avoid failures:

- Inside the hard disk unit, the disk for storing data is rotating at high speed to read and write data. Because this server is very delicate, do not move, strike, or shake it when it is turned on.
- Do not use or store the device in a location affected by extreme temperature changes.
- Keep the device away from direct sunlight and from radiators or other heat source.
- Use or store the device on a shock-and-vibration free surface.
- Do not use or store the device in a humid or dusty place.
- Do not use or store the device near magnets or devices that generate magnetic fields.
- Do not disassemble or take the device apart.
- Keep the disk away from condensation or water droplets.

IMPORTANT

▶ Mishandling could result in destruction of the data stored in the disk. Make sure to keep a backup of important data. Even if the hard disk is of the same type, there could be a slight difference in storage capacity. We recommend backing up data on the basis of files or sectors rather than hard disks.

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Installing hardware options

■ SCSI ID and Order of Installation

The numbers and SCSI IDs of the 3.5-inch storage bays are as follows.

The SCSI IDs for internal hard disk units are set automatically.

[Standard drive cage (1ch)]
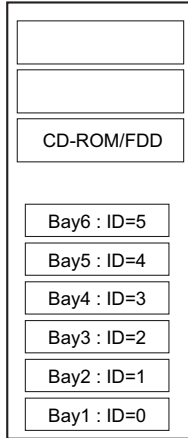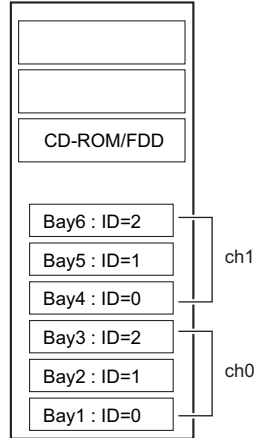
CD-ROM/FDD
Bay6 : ID=5
Bay5 : ID=4
Bay4 : ID=3
Bay3 : ID=2
Bay2 : ID=1
Bay1 : ID=0

[With Upgrade kit 6 hard disks 2 channel (2x3)]

CD-ROM/FDD	
Bay6 : ID=2	
Bay5 : ID=1	ch1
Bay4 : ID=0	
Bay3 : ID=2	
Bay2 : ID=1	ch0
Bay1 : ID=0	

[With internal hard disk unit bay conversion kit]

Bay9 : ID=2	
Bay8 : ID=1	ch1
Bay7 : ID=0	
CD-ROM/FDD	
Bay6 : ID=5	
Bay5 : ID=4	
Bay4 : ID=3	ch0
Bay3 : ID=2	
Bay2 : ID=1	
Bay1 : ID=0	

[Rack mount type (1ch)]

Bay1 : ID=0	Bay2 : ID=1	Bay3 : ID=2	Bay4 : ID=3	Bay5 : ID=4	Bay6 : ID=5	
						CD-ROM/FDD
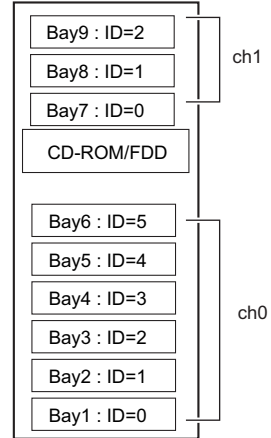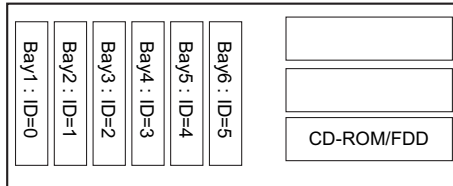
Install internal hard disk units in the following order.

table: Order of Internal Hard Disk Unit Installation

Number of channels	Order of installation
Standard drive cage (1ch)	Bay 1 → Bay 2 → Bay 3 → Bay 4 → Bay 5 → Bay 6
Upgrade kit 6 hard disks 2 channel (2x3)	Bay 1 → Bay 4 → Bay 2 → Bay 5 → Bay 3 → Bay 6
Internal hard disk unit bay conversion kit (2ch)	Bay 1 → Bay 2 → Bay 3 → Bay 4 → Bay 5 → Bay 6 → Bay 7 → Bay 8 → Bay 9

■ Connections

Internal hard disk units are connected as described below.

For an array type (array system configuration) install the RAID Ctrl 0-Channel 128MB w/ BBU in PCI slot 1.

For a basic RAID card conversion kit, install the RAID Ctrl 2-Channel 128MB w/ BBU (PGB1U42E3) in PCI slot 1.

● 1ch

● 2ch

[RAID Ctrl 2-Channel 128MB w/ BBU (PG-142E3)]

● 1ch

Terminal resistor

Baseboard

Bay3

Bay2

CD-ROM/FDD

Secondary
IDE connector

RAID Ctrl 2-Channel
128MB w/ BBU (PG-142E3)

SCSI connector B

Bay6
Bay5
Bay4
Bay3
Bay2
Bay1

ch0

● 2ch

Terminal resistor

Baseboard

Bay3

Bay2

CD-ROM/FDD

Secondary
IDE connector

RAID Ctrl 2-Channel
128MB w/ BBU (PG-142E3)
ch1

Bay6
Bay5
Bay4
Bay3
Bay2
Bay1

ch0

SCSI connector B
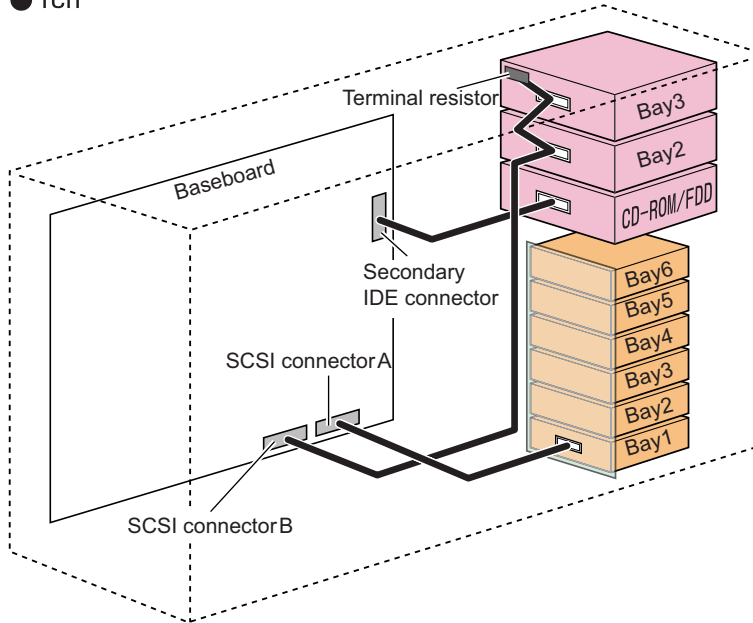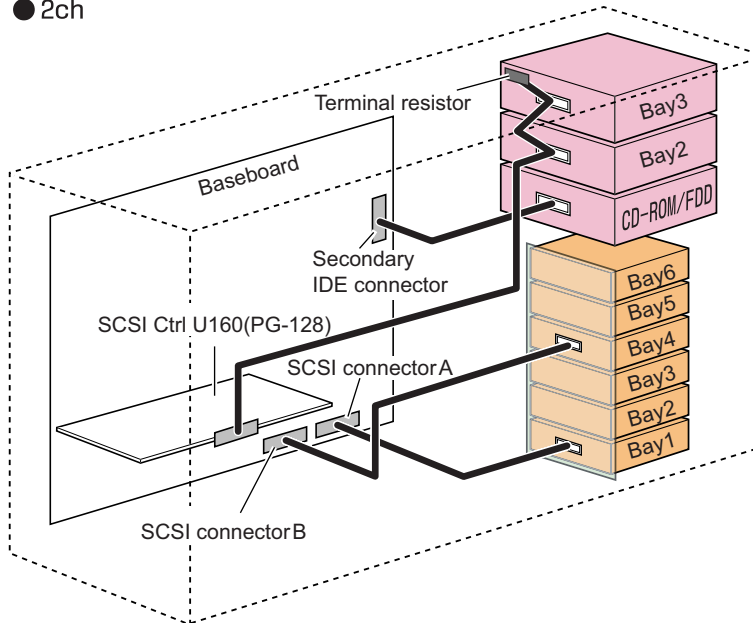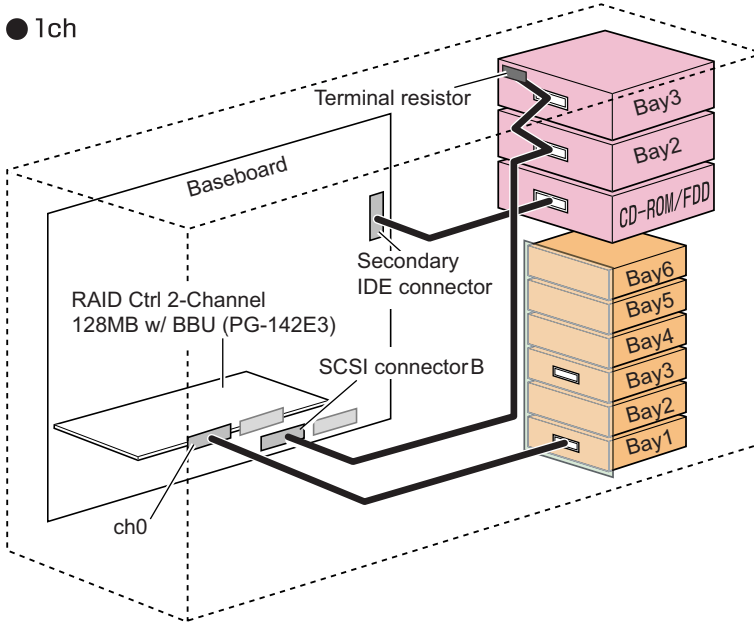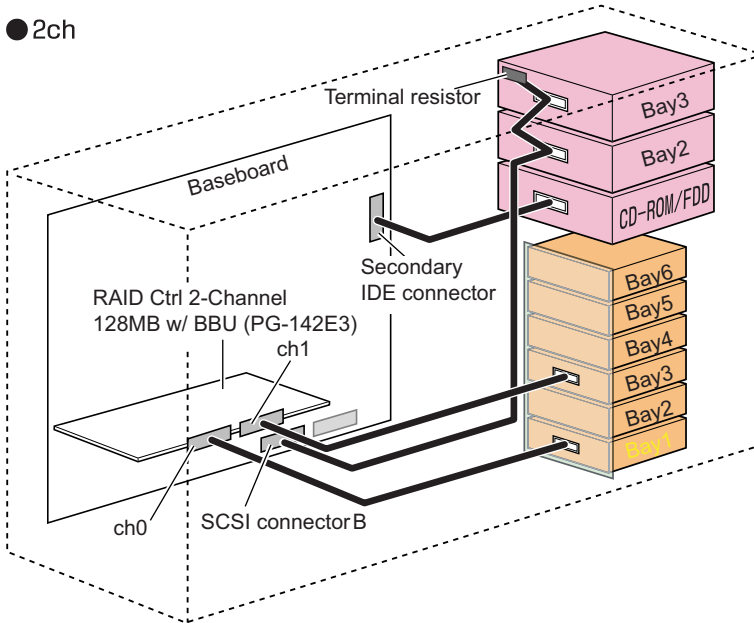
7.6.3 How to Install the Internal Hard Disk Unit

1 Turn off the server and connected devices, and unplug all power cables from the outlet.

2 Slide the drive cover up.
When the drive cover is locked, unlock the drive cover before sliding it up.

3 Remove the hard disk cover.
Tilt the hard disk cover toward you and pull it to remove.
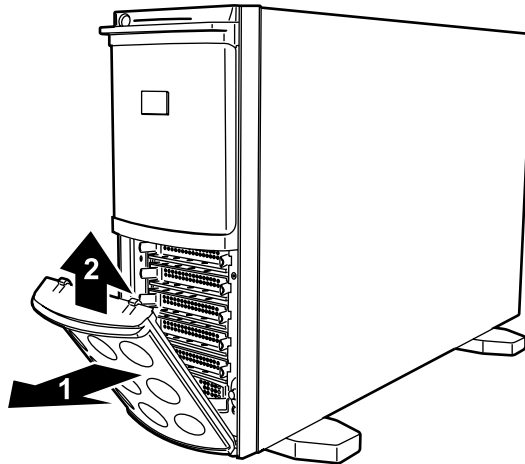
4 Touch a metal part of the server to discharge static electricity.

5 Remove the dummy unit from the bay to accommodate an internal hard disk unit.
Pull the dummy unit out towards you with its tabs being pressed inward.
Be sure to keep the removed dummy units for later use.

Tabs

7
Installing hardware options
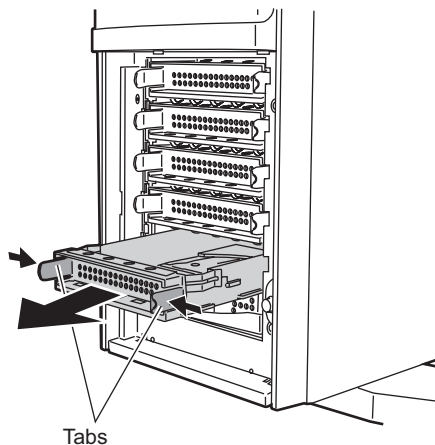
6 Install the internal hard disk unit into the server unit.

Push the unit into the bay with the handle up and pull down the handle to secure.

Handle
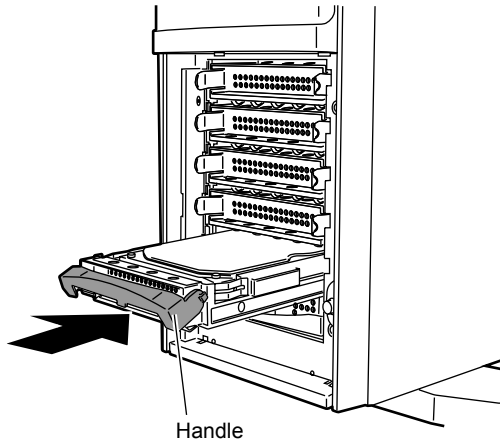
7 Attach the hard disk cover.

7.6.4 How to Remove the Internal Hard Disk Unit

1 Turn off the server and connected devices, and unplug all power cables from the outlet.

2 Remove the hard disk cover.

3 Touch a metal part of the server to discharge static electricity.

4 Remove the internal hard disk unit.

With pressing the front tab of the internal hard disk unit to remove, turn the handle upward and pull the hard disk unit towards you. To remove the internal hard disk unit, use both hands to pull it out.

Handle
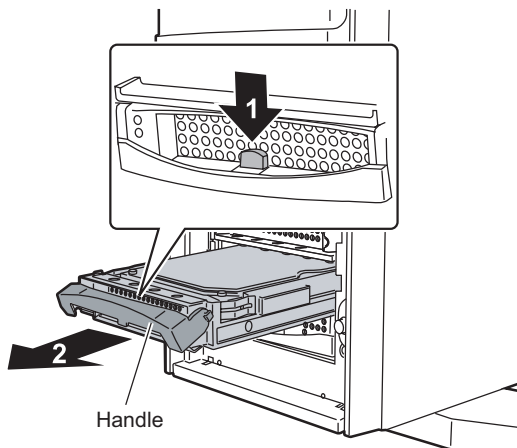
5 Install a dummy unit or a new hard disk unit.

6 Attach the hard disk cover.

7.6.5 Replacing the Failed Internal Hard Disk Unit

When an array system is configured with this server, a failed hard disk unit can be replaced and the restoration can be performed without turning off the server and peripheral devices (hot swappable/hot pluggable). For array systems, refer to "PRIMERGY ServerBooks" supplied with the server, and "Supplement" supplied with options.
Perform the replacement as follows:

1 Open the hard disk cover.

2 Locate the failed hard disk unit by checking the hard disk failure LED of each bay.

3 Pull out the failed hard disk unit a little towards you.

4 Wait for approximately 60 seconds (until the hard disk stops rotating) and pull out the failed hard disk unit.

5 Insert a new hard disk unit.

6 Execute "Rebuild" or "Make Standby".
"Rebuild" or "Make Standby" may be executed automatically after hard disk unit replacement. This can be checked from the status of the hard disk failure LED.

7

Installing hardware options

7.7 Installing 5-inch Internal Options

This section explains how to install a 5-inch internal device like DAT(72) unit. Unlike external devices, internal device does not need to be connected to the outlet because its power is supplied from the server. In addition, it offers the advantage of space saving.

⚠WARNING   Electric Shock   • When installing or removing internal devices, turn off the server, all peripheral devices, and any other connected devices. Also unplug all power cables from the outlet.
Failure to do so can cause electric shock.
• Install our genuine internal devices only.
Failure to do so may cause a device failure, fire, or electric shock.

⚠CAUTION   • When installing or removing hardware options, make sure to remove the screws on the specified points only.
There is a chance of injury if screws other than those on the specified points are removed. This could also damage the server.

• Touch only the specified part of the printed circuit board.
Failure to do so could cause injury and also damage the server.

⚠IMPORTANT

▶ Before adding a 5-inch internal device, install the OS and turn off the server.

7.7.1 Where to Install 5-inch Internal Devices

Install 5-inch internal devices in 5-inch storage bays.

[Inside]

5 inch storage bay
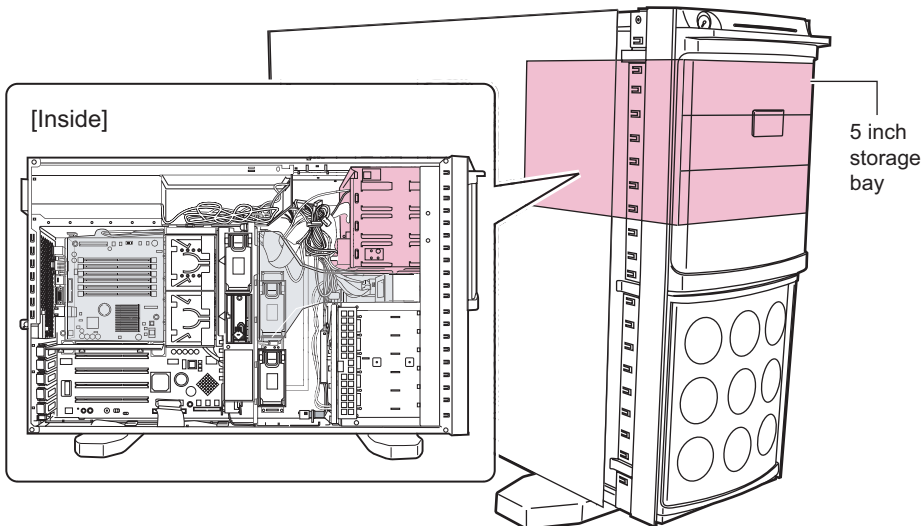
7.7.2 Installable 5-inch Internal Devices and Notes

This section explains installable 5-inch internal devices, SCSI IDs, and connections. Check this section before installing.

■ Installable 5-inch Internal Devices

The following types of 5-inch internal devices can be installed in this server.

table: Installable 5-inch Internal Devices

Product name	Model	Available bay
Tape Drv DAT72 36GB internal	PG-DT501	Bays 2 and 3
Tape Drv VXA-2 80GB	PG-VX201	Bays 2 and 3
Tape Drv LTO Ultrim 100GB	PG-LT101	Bays 2 and 3
Internal hard disk unit bay conversion kit	PG-BC102	Bays 2 and 3

IMPORTANT

▸ When the Upgrade kit 6 hard disks 2 channel (2x3) is used, the internal hard disk unit bay conversion kit cannot be installed.

POINT

▸ The internal hard disk unit bay conversion kit require two bays to install.

■ Bay Locations and SCSI IDs

The bay locations and SCSI IDs of the 5-inch storage bays are as follows:

Bay3 : ID=6

Bay2 : ID=5

Bay1
CD-ROM/FDD

* When using 2 bays SCSI-ID=5

Bay3 : ID=6

Bay2 : ID=5

Bay1
CD-ROM/FDD

[Rack mount type]

■ Connections

Connect 5-inch internal devices as described below.

When the Upgrade kit 6 hard disks 2 channel (2x3) is used and a RAID Ctrl 2-Channel 128MB w/ BBU (PG-142E3) for internal connection is not installed, the onboard SCSI connector cannot be used. Install a SCSI Ctrl U160 (PG-128) to connect a 5-inch internal device.

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Installing hardware options

[Onboard SCSI connector]

Terminal resistor

Bay3

Bay2

CD-ROM/FDD

Baseboard

Secondary
IDE connector

Bay6
Bay5
Bay4
Bay3
Bay2
Bay1

SCSI connector B

[Internal hard disk unit bay conversion kit]

Baseboard

Bay9
Bay8
Bay7

CD-ROM/FDD

Secondary
IDE connector

SCSI connector A

Bay6
Bay5
Bay4
Bay3
Bay2
Bay1

SCSI connector B

216

[SCSI Ctrl U160(PG-128)]
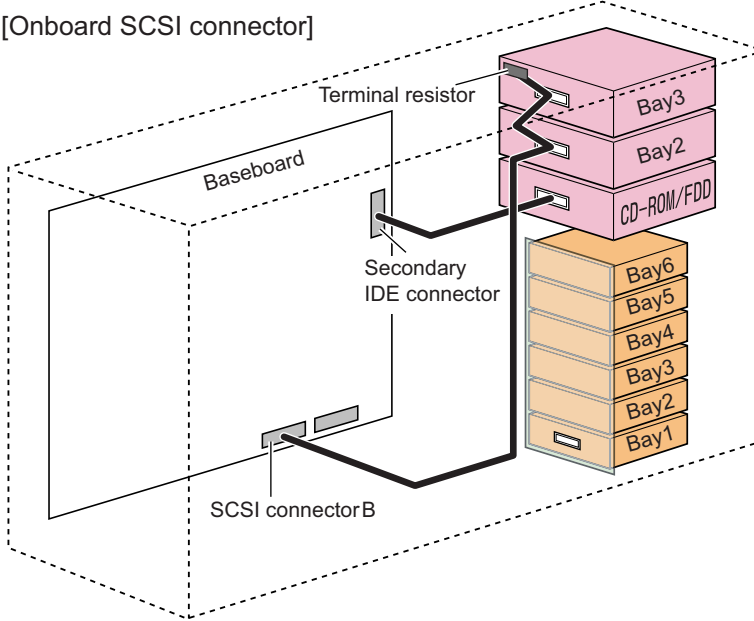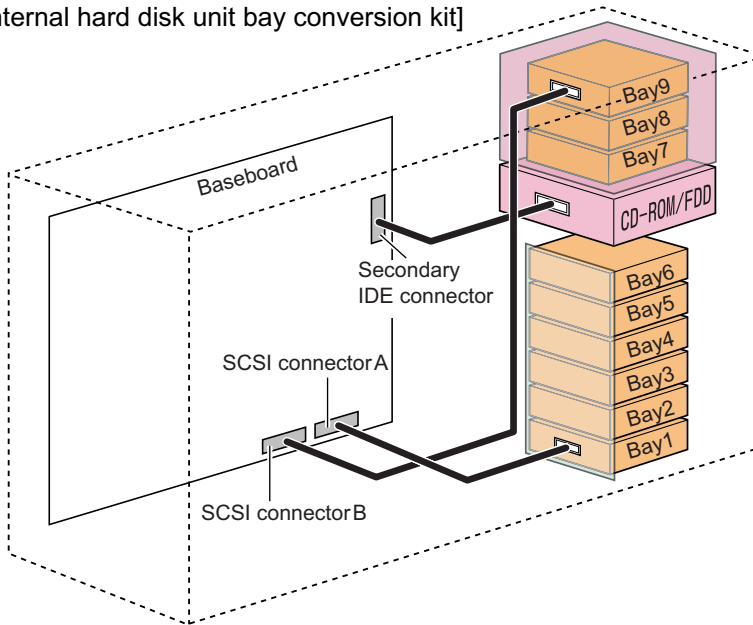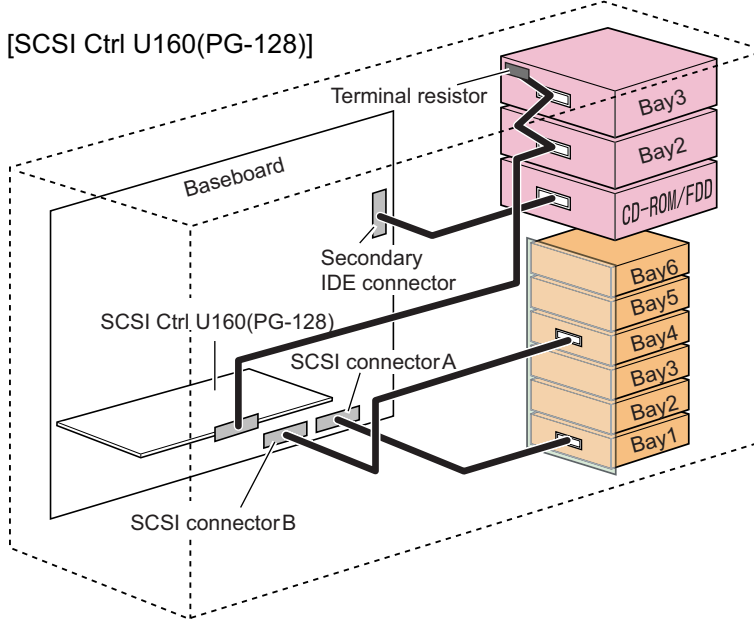
7.7.3 How to Install the 5-inch Internal Device

Perform the following procedures to install a 5-inch internal device. When installing the internal hard disk unit conversion kit the procedures vary. Refer to"7.7.4 How to Install the Internal Hard Disk Unit Bay Conversion Kit" (→pg.220).

1 Set SCSI IDs of the 5-inch internal devices.

For SCSI IDs of devices, refer to "■ Installable 5-inch Internal Devices" (→pg.215).

2 Turn off the server and connected devices, and unplug all power cables from the outlet.

3 Remove the side and front covers.

→"7.2 Removing and Attaching Covers" (pg.176)

4 Touch a metal part of the server to discharge static electricity.

5 Remove the dummy unit.

Pull the dummy unit out slowly towards you, keeping the tabs on the 5-inch storage bay rails (on both sides) pressed inward.

Tabs
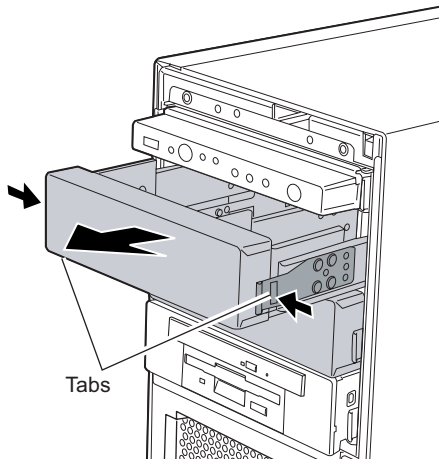
POINT

▶ Be sure to keep the removed dummy units for later use.

6 Detach the 5-inch storage bay rails from the removed dummy unit.

Remove eight screws that fix the 5-inch storage bay rails to detach.

Inch thread

Metric thread

Inch thread   Metric thread
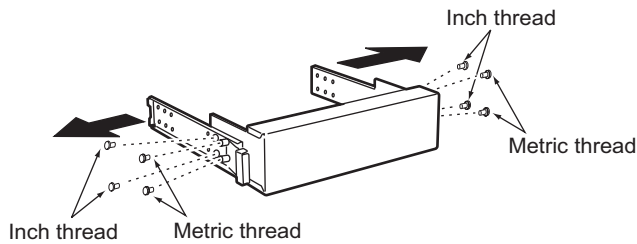
7 Attach the removed 5-inch storage bay rails to the internal device to be added.

Of the eight screws removed from the dummy unit when the 5-inch storage bay rails were detached, use four metric threads to install the internal device.

8 Install the internal device to the 5-inch storage bay.

Push it into the bay to install the internal device until it clicks.
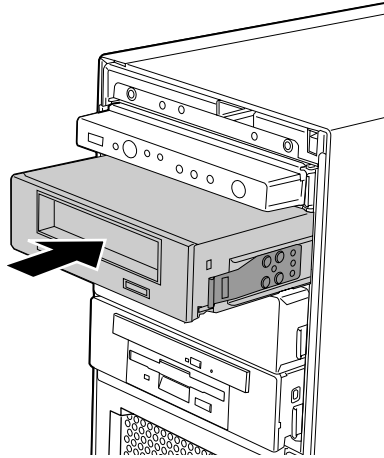
9 Remove the ventilation system cover on the system fan.
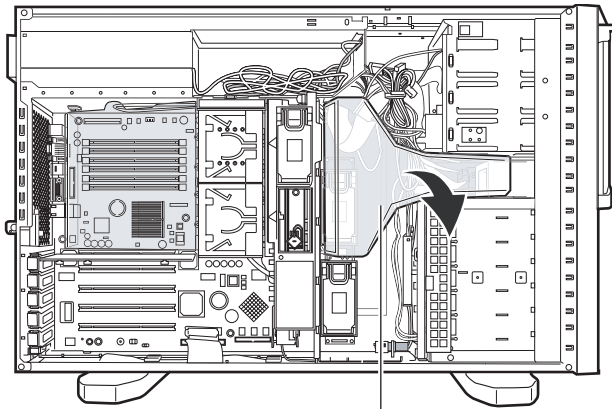
Ventilation system cover

10 Connect a SCSI cable to the 5-inch internal devices.

When adding one 5-inch internal device

Use the port A shown in the following cable illustration for SCSI cable connection.

When adding two 5-inch internal devices

When connecting a SCSI cable to the internal devices, use port A shown in the following cable illustration for the internal device installed in Bay 3 and use port B for the internal device installed in Bay 2.

Port B   Port A   Terminal resistor

To onboard SCSI
or SCSI Ctrl U160

7

Installing hardware options

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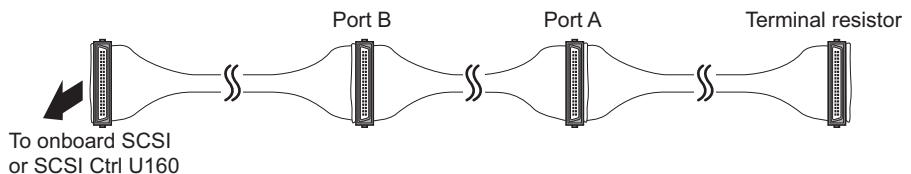
11 Connect the SCSI cable to the onboard SCSI port or the SCSI Ctrl U160 (PG-128).

When connecting to the onboard SCSI port
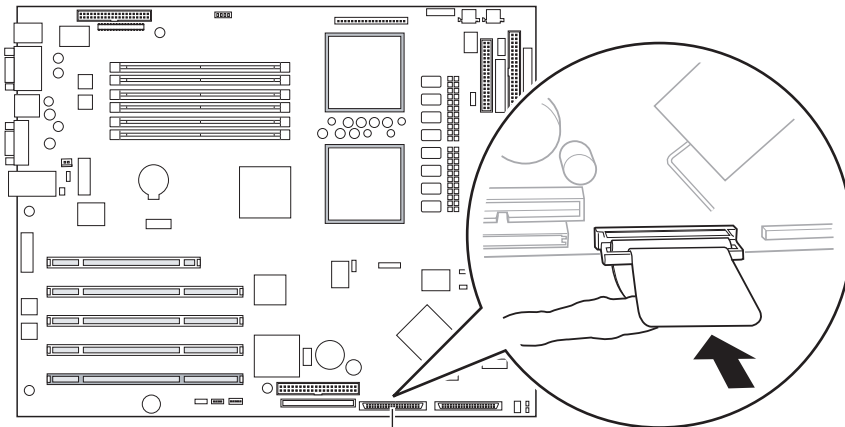
Onboard SCSI connector B

When connecting to the SCSI Ctrl U160

For how to install a SCSI Ctrl U160, refer to "7.5.3 How to Install an Expansion Card" (→pg.202).

12 Connect the power cable to the 5-inch internal devices.

Connect the power cable to the internal devices to which the SCSI cable is connected.

13 Attach the ventilation system cover.

Make sure to avoid pinching cables when attaching.

14 Attach the front and side covers.

7.7.4 How to Install the Internal Hard Disk Unit Bay Conversion Kit

IMPORTANT

▸ When the Upgrade kit 6 hard disks 2 channel (2x3) is used, the internal hard disk unit bay conversion kit cannot be installed.

1 Turn off the server and connected devices, and unplug all power cables from the outlet.

2 Remove the side and front covers.

→"7.2 Removing and Attaching Covers" (pg.176)

3 Touch a metal part of the server to discharge static electricity.

4 Remove the two dummy units.

Pull the dummy unit out slowly towards you, keeping the latches on the 5-inch storage bay rails (on both sides) pressed inward.

Latches
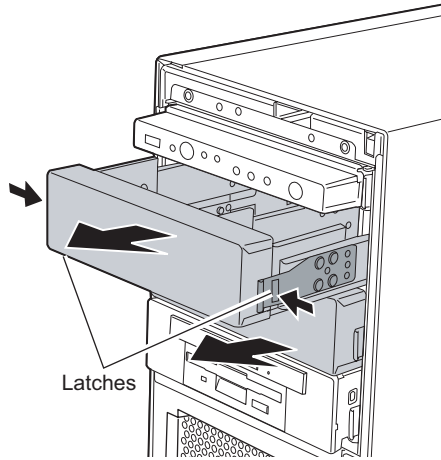
🔎**POINT**

▶ Be sure to keep the removed dummy units for later use.

5 Detach the 5-inch storage bay rails from the removed dummy unit.

Remove eight screws that fix the 5-inch storage bay rails to detach.

Inch thread

Metric thread

Inch thread   Metric thread
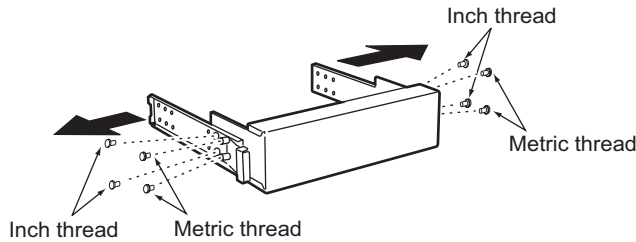
6 Attach the removed 5-inch storage bay rails to the internal hard disk unit bay conversion kit to be added.

Of the eight screws removed from the dummy unit when the 5-inch storage bay rails were detached, use four metric threads to install the internal device.
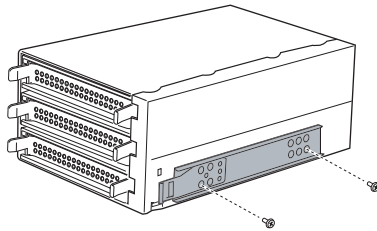
* Also secure the opposite side in the same way.

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Installing hardware options

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7 Install the internal hard disk unit bay conversion kit.

Push it into the 5-inch bay until it clicks.
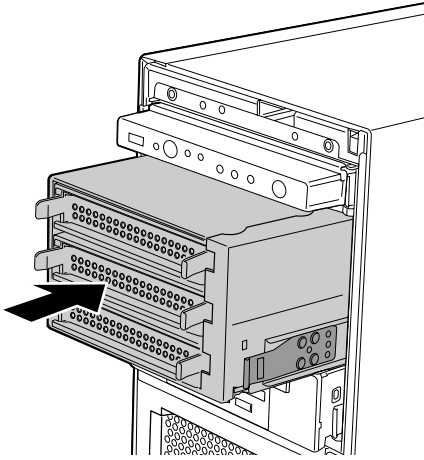
8 Remove the ventilation system cover on the system fan.
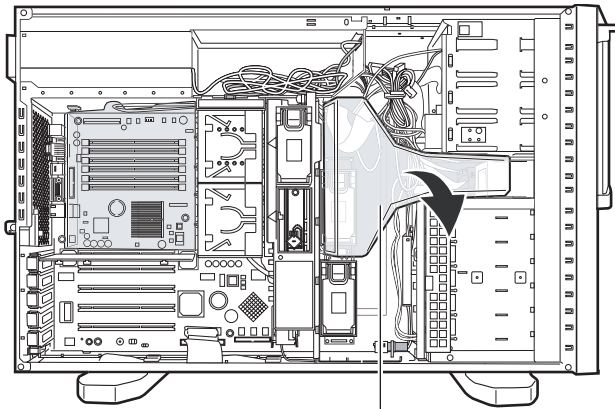
Ventilation system cover

9 Connect the SCSI cable, power cable, and SMB cable to the internal hard disk unit bay conversion kit.

Internal hard disk unit bay conversion kit

SCSI cable

Power cable
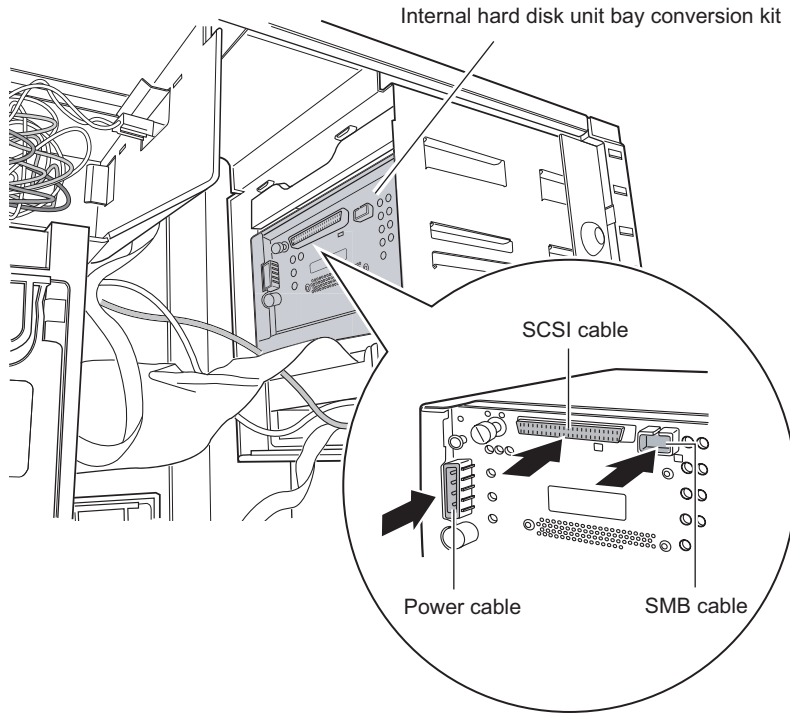
SMB cable

10 Install the cable clamp to the SMB cable connector to fasten the SMB cable.

[Internal hard disk unit bay conversion kit - Rear]

Cable clamp

SMB cable
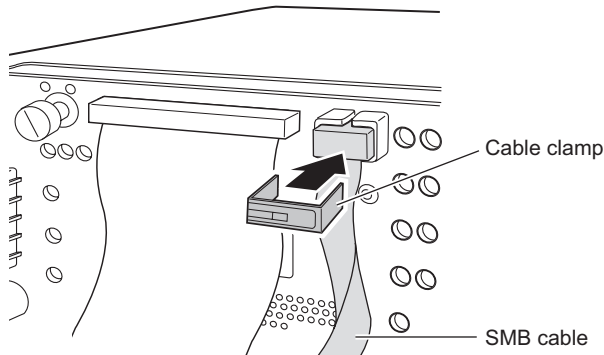
11 Connect the SCSI cable to the onboard SCSI or RAID Ctrl 2-Channel 128MB w/ BBU (PG-142E3).

When connecting to the onboard SCSI port
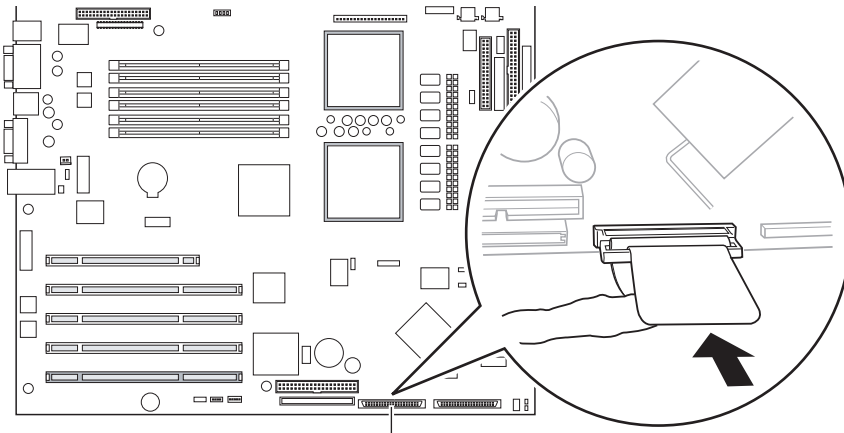
Onboard SCSI connector B

When connecting to the RAID Ctrl 2-Channel 128MB w/ BBU

For how to install the RAID Ctrl 2-Channel 128MB w/ BBU, refer to "7.5.3 How to Install an Expansion Card" (→pg.202).

POINT

▶ For details about connection patterns refer to "■ Connections" (→pg.209). The internal hard disk unit bay conversion kit is connected in a 2ch configuration.

12 Attach the ventilation system cover.

Make sure to avoid pinching cables when attaching.

13 Attach the front and side covers.

7.8 Installing a Parallel Port

When a parallel port is necessary, install an optional parallel port.

POINT

▶ For the parallel port location, refer to "1.3.2 Server (Rear View)" (→pg.25).

⚠WARNING

Electric Shock • When installing or removing a parallel port, turn off the server, all peripheral devices, and any other connected devices. Also unplug all power cables from the outlet.
Failure to do so can cause electric shock.

⚠CAUTION

• Touch only the specified part of the printed circuit board.
Failure to do so could cause injury and also damage the server.
• Be careful to avoid injury when handling the parallel port connector panel removed from the rear of the server.

7.8.1 How to Install a Parallel Port

1 Turn off the server and connected devices, and unplug all power cables from the outlet.

2 Remove the side cover.
→"7.2 Removing and Attaching Covers" (pg.176)

3 Touch a metal part of the server to discharge static electricity.

4 Remove the ventilation system cover.
Release the latch on the ventilation system cover and lift it up to remove.

Latch

Ventilation system cover

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Installing hardware options
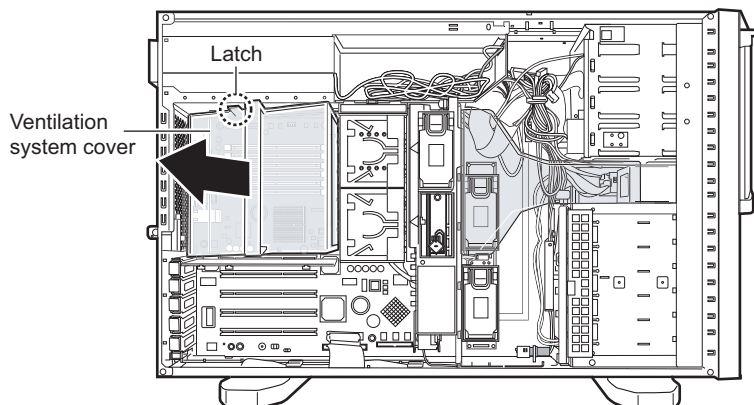
5 Remove the parallel port connector panel from the rear side.

Insert a flat blade screwdriver into the hole at the center of the panel. Move the screwdriver to the right and left and pull the panel off.

[Rear]
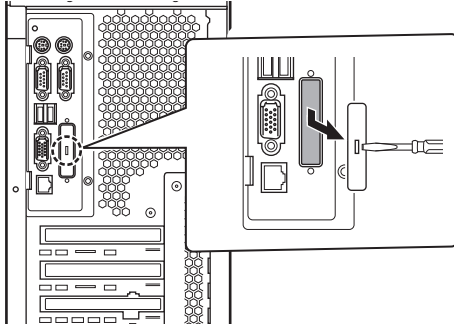
6 Connect a parallel cable to the onboard parallel connector and attach the connector of the cable to the rear panel.
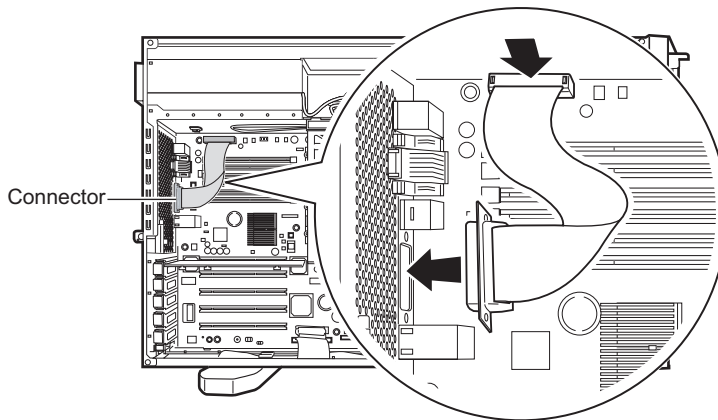
Connector

7 Secure the connector using screws from the rear side.

[Rear]
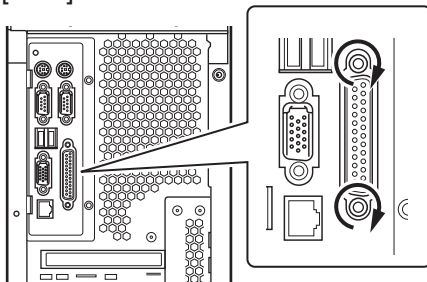
8 Attach the ventilation system cover.

9 Attach the side cover.

7.9 Connecting External SCSI Devices

This section explains connection of external SCSI devices.

7.9.1 Connecting a Hard Disk Cabinet

When a RAID Ctrl 2-Channel 128MB w/ BBU (PG-142E3) is used, a hard disk cabinet (PRIMERGY SX30) can be connected to configure a large-capacity array system.
The following shows an example of system configuration and connection.

• Example of system configuration connected to hard disk cabinet(PRIMERGY SX30)
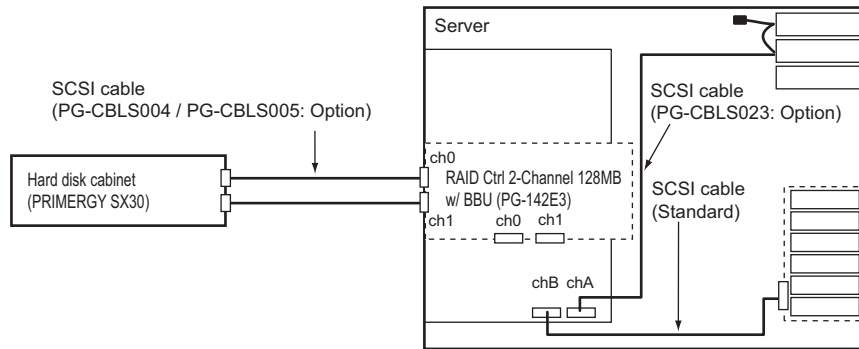
7.9.2 Connecting External SCSI Devices

External SCSI devices with different SCSI IDs are connected in a daisy chain as shown in the following figure.
Up to two external SCSI devices can be connected.
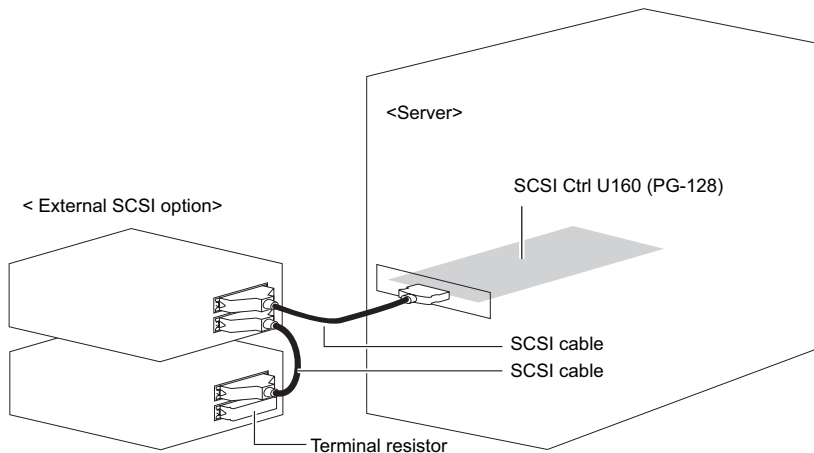
■ Notes on Connecting External SCSI Devices

● Terminal Resistor

Install a terminal resistor to the external SCSI device at the end of the daisy chain. Alternatively, use the auto termination function of the external SCSI device.
Be sure to use the terminal resistor supplied with a SCSI device only on that device.

table: Types of Terminal Resistor

Connector on optional SCSI devices	Terminal resistor
Half-pitched 68-pin connector	Supplied with optional SCSI devices

● Daisy Chain Connection

Daisy chain connection is impossible between devices with different SCSI interfaces. Use a SCSI Ctrl U160 separately for connection.
DLT and LTO library devices cannot be connected in a daisy chain.

Chapter 8

Configuring Hardware and Utilities

8

This chapter explains how to make the environment settings necessary to operate the server and how to use each utility.

8.1 Switch Settings

The BIOS password setting can be deleted through the switch block settings.

IMPORTANT

▶ Do not change the switch settings except when deleting the BIOS password.

8.1.1 Switch Location and Settings

■ Switch Location

The switch block of the server is located on the baseboard as shown below.

Switch block
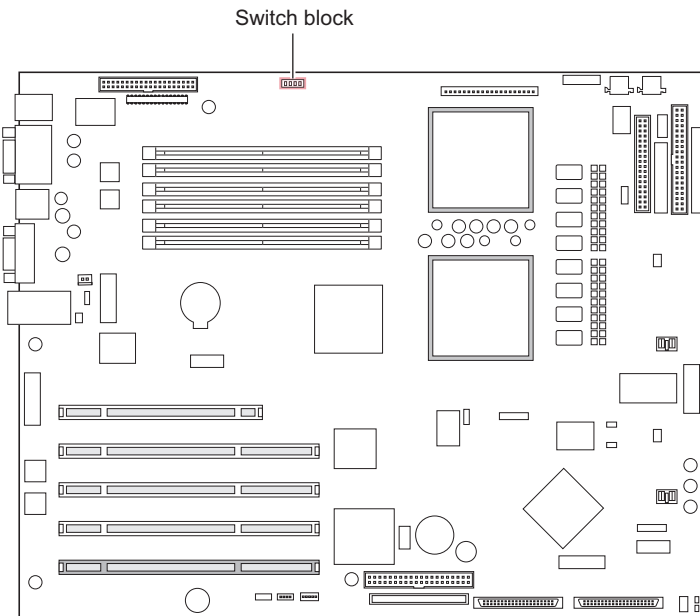
■ Switch Settings

The switch settings are as follows:

table: Switch Settings

Switch number	Description
Switch 1	Always keep in OFF position.
Switch 2	When deleting the password turn to "ON". After the operation always return the switch to its original "OFF" position.
Switch 3	Always keep in OFF position.
Switch 4	Always keep in OFF position.

8.2 BIOS Setup Utility

This section explains settings for the BIOS Setup Utility and items regarding each setting.

8.2.1 Starting and Exiting the BIOS Setup Utility

The following explains how to start and exit the BIOS Setup Utility.

■ How to Start the BIOS Setup Utility

1 Turn the server on.

2 During POST, press the [F2] key while the message "<F2>BIOS Setup / <F12> BOOT Menu" is displayed on the screen.
The [Main menu] window appears when the POST completes.

```
                    PhoenixBIOS Setup Utility

    Main     Advanced     Security     Server     Exit

                                                    Item Specific Help
  System Time:          [HH:MM:SS]
  System Date:          [MM/DD/YYYY]

  Diskette A:           [1.4M]

> IDE Drive1:           [None]
> IDE Drive2:           [None]
> IDE Drive3:           [SR244W-(SM)]
> IDE Drive4:           [None]

> Boot Options

  Base Memory:          640 KB
  Extended Memory:      ***M


  F1   Help      ↑↓  Select Item   -/+    Change Values    F9   Setup Defaults
  Esc  Exit      ←→  Select Menu    Enter  Select > Sub-Menu  F10  Save and Exit
```

POINT

When the [Main menu] window does not appear

▶ When the [Main menu] window does not appear because the [F2] is pressed at wrong timing, press the [Ctrl] + [Alt] + [Delete] keys at the same time to restart the system, then start the BIOS Setup Utility.

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◯POINT

▸ While the message "<F2> BIOS Setup / <F12> BOOT Menu" is displayed, pressing the [F12] key
causes the Boot Menu screen to appear when POST completes.

```
┌─────────────────────────────────────────┐
│              Boot Menu                    │
├─────────────────────────────────────────┤
│                                           │
│   1.  CD-ROM Drive                        │
│   2.  +Diskette                           │
│   3.  +Hard Drive                         │
│   4.  Legacy LAN Card                     │
│                                           │
│                                           │
│  < ↑ ↓ > Select  <Enter> Confirm          │
│                                           │
└─────────────────────────────────────────┘
```
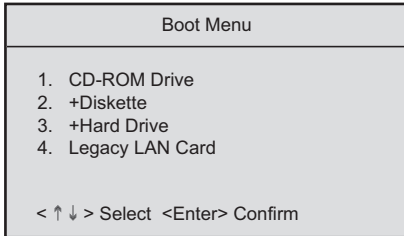
● Key Operations in the BIOS Setup Utility

The roles of the keys used for setting the BIOS Setup Utility are as follows:

table: List of Key Operations on the BIOS Setup Utility Window

Key	Description
[F1]	Displays Help.
[Esc]	Ends this utility. In the case of a submenu it returns to the previous menu.
[↑][↓]	Scrolls through the menu option list.
[←][→]	Switches between menus.
[-][+]	Changes the value of an item.
[Enter]	Activates the selected item or displays the sub menu of items with the mark. In items in which ▶ is displayed the sub menu appears.
[F9]	Sets each item to its initial (default) value.
[F10]	Saves the setting values and ends the operation. In the case of a submenu it returns to the previous menu.

■ How to Exit the BIOS Setup Utility

1 Use the [←] [→] keys to display the [Exit] menu.

```
┌──────────────────────────────────────────────────────────────────────┐
│                        PhoenixBIOS Setup Utility                        │
├──────────────────────────────────────────────────────────────────────┤
│   Main      Advanced      Security      Server      Exit                │
├──────────────────────────────────────────────────────────────────────┤
│                                                    Item Specific Help   │
│   Save Changes & Exit                                                   │
│   Discard Changes & Exit                                               │
│   Get Default Values                                                    │
│   Load Previous Values                                                  │
│                                                                        │
│                                                                        │
│                                                                        │
│                                                                        │
│                                                                        │
│                                                                        │
│                                                                        │
│                                                                        │
├──────────────────────────────────────────────────────────────────────┤
│  F1   Help    ↑↓   Select Item   -/+    Change Values    F9  Setup Defaults │
│  Esc  Exit    ←→   Select Menu   Enter  Execute Command  F10 Save and Exit  │
└──────────────────────────────────────────────────────────────────────┘
```
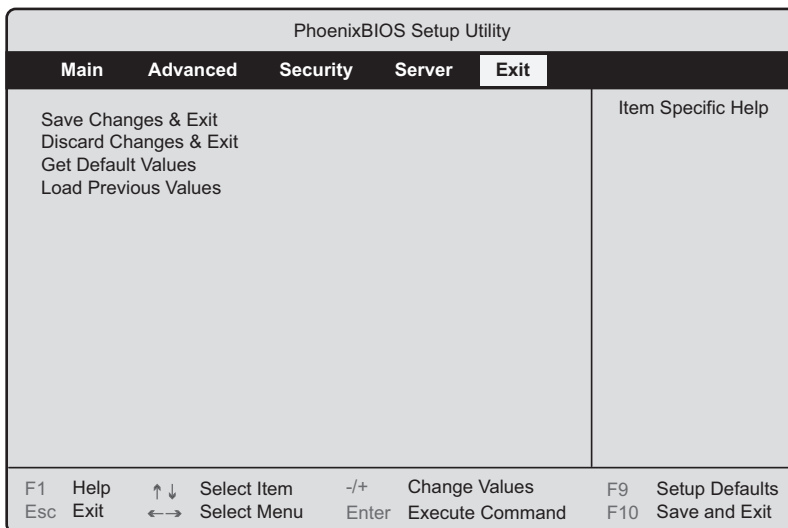
2 Use the [↑] [↓] keys to select the exit mode.

<u>To save configuration changes before exiting:</u>

Move the cursor to [Save Changes & Exit] and press the [Enter] key.

The message "Save configuration changes and exit now?" is displayed.

<u>To exit without saving configuration changes:</u>

Move the cursor to [Discard Changes & Exit] and press the [Enter] key.

When the setting are changed, the "Configuration has not been saved Save before exiting?" message is displayed.

3 Use the [←] [→] keys to move the cursor to [Yes] or [No], and press the [Enter] key.

<u>If you selected [Save Changes & Exit] from the [Exit] menu:</u>

• Select [Yes] to exit.

After saving changes to settings, the BIOS Setup Utility closes and the server restarts.

• Select [No] not to exit.

The display returns to the BIOS Setup Utility window.

<u>If you selected [Discard Changes & Exit] from the [Exit] menu:</u>

• Select [Yes] to save changes before exit.

The BIOS Setup Utility closes and the server restarts.

• Select [No] when not saving the settings.

The BIOS Setup Utility closes and the OS starts.

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8.2.2   Main Menu

The [Main] menu is initially displayed when you start the BIOS Setup Utility.

Settings for time and date and for the drives are configured on the [Main] menu.

```
                         PhoenixBIOS Setup Utility

      Main      Advanced      Security      Server      Exit

                                                      Item Specific Help
    System Time:          [HH:MM:SS]
    System Date:          [MM/DD/YYYY]

    Diskette A:           [1.4M]

  > IDE Drive1:           [None]
  > IDE Drive2:           [None]
  > IDE Drive3:           [SR244W-(SM)]
  > IDE Drive4:           [None]

  > Boot Options

    Base Memory:          640 KB
    Extended Memory:      ***M


  F1    Help      ↑↓   Select Item    -/+     Change Values       F9    Setup Defaults
  Esc   Exit      ←→   Select Menu   Enter    Select > Sub-Menu   F10   Save and Exit
```

table: Items on the Main Menu

Item	Setting	Description
System Time	Present time	The system time is set in "hours:minutes:seconds" format. The hours should be based on a 24-hour clock. For example, 6:30:00 P.M. is set as "18", "30", "00". If a highly precise system time is necessary, install a network synchronized time system (NTP, etc.).
System Date	Present date	The system date is set in "month:day:year" format. For example, August 20, 2005 is set as "08", "20", "2005".
Diskette A	1.4M (Fixed parameter)	Sets the type of Floppy Disk Drive A (recording density and drive size).
IDE Drive1	Sets the type and operating mode for connected IDE devices. After selecting the IDE device to be set, press the [Enter] key to display the "8.2.3 IDE Drive Submenu" (→pg.235) window.	
IDE Drive2		
IDE Drive3		
IDE Drive4		
Boot Options	Sets system startup options. Press the [Enter] key to display the "8.2.4 Boot Options Submenu" (→pg.236) window.	
Base Memory	A usable base memory size of less than 1MB appears.	
Extended Memory	A memory size of more than 1MB appears.	

8.2.3 IDE Drive Submenu

Sets the type and operating mode for connected IDE devices.

```
                    PhoenixBIOS Setup Utility

   Main    Advanced    Security    Server    Exit

            Secondary Master [CD-ROM]              Item Specific Help

   Type:                   [Auto]

   Transfer Mode:          [Disabled]
   LBA Translation:        [Disabled]
   32 Bit I/O:             [Enabled]
   PIO Mode:               [Standard]
   Ultra DMA Mode:         [Disabled]




   F1   Help     ↑↓  Select Item   -/+   Change Values     F9   Setup Defaults
   Esc  Exit     ←→  Select Menu  Enter  Select > Sub-Menu  F10  Save and Exit
```

table: Items on the IDE Drive1 / IDE Drive2 / IDE Drive3 / IDE Drive4 Submenu

Item	Setting	Description
Type	Auto (Fixed parameter)	Sets the type of the IDE device.
Transfer Mode	Disabled (Fixed parameter)	The server does not support this yet.
LBA Translation	Disabled (Fixed parameter)	The server does not support this yet.
32 Bit I/O	Enabled (Fixed parameter)	Specifies the bus width for data transfer between the processor and the IDE controller.
PIO Mode	• IDE Drive1, IDE Drive2, IDE Drive4 Standard • IDE Drive3 PIO4/DMA2	Displays the data transfer mode. Cannot be changed.
Ultra DMA Mode	• IDE Drive1, IDE Drive2, IDE Drive4 Disabled • IDE Drive3 Mode2	Cannot be changed.

8.2.4 Boot Options Submenu

Sets system startup options.

```
                    PhoenixBIOS Setup Utility

   Main      Advanced      Security      Server      Exit

              Boot Options                    Item Specific Help

   POST Errors:           [Halt On All Errors]
   Keyboard Check:        [Enabled]
   SM Error Halt:         [Disabled]
   Fast Boot:             [Disabled]
   Quiet Boot:            [Disabled]
   NumLock                [Auto]
   Boot Menu:             [Enabled]
   MultiBoot for HDs:     [Disabled]

 > Boot sequence:




   F1   Help      ↑↓  Select Item    -/+   Change Values      F9   Setup Defaults
   Esc  Exit      ←→  Select Menu    Enter Select > Sub-Menu   F10  Save and Exit
```

table: Items on the Boot Options Submenu

Item	Setting	Description
POST Errors	Halt On All Errors (Fixed parameter)	Sets whether or not to stop the boot process and shut down the system, in case a POST (Power On Self Test) error is detected.
Keyboard Check	• Disabled • Enabled (at the time of purchase)	Sets whether or not to check keyboard connection during POST.
SM Error Halt	Disabled (Fixed parameter)	Sets the procedure in case an error occurs regarding the fan or temperature sensor.
Fast Boot	Disabled (Fixed parameter)	Sets whether or not to reduce the scope of POST and thereby speed up system startup.
Quiet Boot	Disabled (Fixed parameter)	Sets whether or not to display the logo screen instead of POST information.
NumLock	Auto (Fixed parameter)	The state of the NumLock during activation.
Boot Menu	Enabled (Fixed parameter)	Sets whether or not to display the boot drive selection window after POST. By selecting the boot drive from the [Boot Menu] window, startup can be done from the selected boot drive regardless of the [Boot Sequence] setting.
MultiBoot for HDs	• Disabled (at the time of purchase) • Enabled	Sets whether or not it is possible to specify the order of hard disks to boot the operating system (OS) when multiple hard disk units are installed. To perform a PXE boot, set to [Enabled].

table: Items on the Boot Options Submenu

Item	Setting	Description
Boot Sequence	• CD-ROM Drive • Diskette • Hard Drive • Legacy LAN Card	The order of reading the OS is set by pressing [Enter]. Use the [+] [-] keys to change the order of priority for the selected device. Booting from a selected device can be disabled with the [Space] key. (The mark "!" is displayed by the name of the disabled device.) If a non-existing device is displayed, delete it from the list with the [*] key.

8.2.5 Advanced Menu

The [Advanced] menu sets the peripheral device and PCI device options.

```
                    PhoenixBIOS Setup Utility

    Main    Advanced    Security    Server    Exit

                                                         Item Specific Help
                     Setup Warning
        Setting items on this menu to incorrect values
        may cause your system to malfunction.

    > Peripheral Configuration
    > PCI Configuration
    > Advanced System Configuration
    > Power On/Off
    > IPMI

      Reset Configuration Data:            [No]


      Multiprocessor Specification:        [1.4]


    F1   Help      ↑↓  Select Item     -/+   Change Values      F9   Setup Defaults
    Esc  Exit      ←→  Select Menu     Enter Select > Sub-Menu  F10  Save and Exit
```

table: Items on the Advanced Menu

Item	Setting	Description	
Peripheral Configuration	Configures the serial port, parallel port, etc. Press the [Enter] key to display the "8.2.6 Peripheral Configuration Submenu" (→pg.238) window.		
PCI Configuration	Configures the PCI device. Press the [Enter] key to display the "8.2.7 PCI Configuration Submenu" (→pg.240) window.		
Advanced System Configuration	Configures additional settings. Press the [Enter] key to display the "8.2.8 Advanced System Configuration Submenu" (→pg.241) window.		
Power On/Off	Configures power On/Off settings. Press the [Enter] key to display the "8.2.9 Power On/Off Submenu" (→pg.243) window.		
IPMI	Configures server management settings. Press the [Enter] key to display the "8.2.10 IPMI Submenu" (→pg.244) window.		
Reset configuration Data	• Yes • No (at the time of purchase)	Sets whether or not to initialize the Extended System Configuration Data (ESCD) where the system resources are recorded.	

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table: Items on the Advanced Menu

Item	Setting	Description
Multiprocessor Specification	1.4 (Fixed parameter)	Indicates the multiprocessor table version in use. The multiprocessor table is necessary for the operating system for multiprocessors to recognize the system's multiprocessor specifications.

8.2.6 Peripheral Configuration Submenu

Configures the serial port, parallel port, etc.

```
                    PhoenixBIOS Setup Utility

     Main     Advanced     Security     Server     Exit

           Peripheral Configuration              Item Specific Help

   Serial 1:                   [Auto]
   Serial Multiplexer:         [System]
   Serial 2:                   [Auto]
   Parallel:                   [Auto]
   Parallel Mode:              [Bidirection]

   Diskette Controller:        [Enabled]
   Floppy Type:                [Local]
   Local Bus IDE adapter:      [Both]

   Mouse Controller:           [Auto Detect]

   SCSI Controller:            [Channel A&B]
   SCSI Option ROM Scan:       [Enabled]

   LAN Controller:             [Enabled]
   LAN Remote Boot:            [Disabled]

   F1   Help    ↑↓  Select Item    -/+    Change Values      F9   Setup Defaults
   Esc  Exit    ←→  Select Menu    Enter  Select > Sub-Menu  F10  Save and Exit
```

table: Items on the Peripheral Configuration Submenu

Item	Setting	Description
Serial 1	• Disabled • Enabled • Auto (at the time of purchase) • OS Controlled	Configures Serial Port 1.
Serial Multiplexer	• System (at the time of purchase) • BMC • Shared	Changes the function of Serial Port 1. • System Used as a serial port. • BMC Used as a server management port. • Shared The server does not support this yet. **Note:** ▶ Do not set to [Shared].
Serial 2	• Disabled • Enabled • Auto (at the time of purchase)	Configures Serial Port 2.
Parallel	Auto (Fixed parameter)	Configures the parallel port.

table: Items on the Peripheral Configuration Submenu

Item	Setting	Description
Parallel Mode	• Printer • Bidirection (at the time of purchase) • EPP • ECP	Sets the data transfer mode of the parallel port.
Diskette Controller	• Disabled • Enabled (at the time of purchase)	Configures the floppy disk controller.
Floppy Type	Local (Fixed parameter)	Sets the type of floppy disk to be used. When using the server's floppy disk unit, set to [Local]. When using a remote floppy disk drive or floppy disk image, set to [Remote] or [Remote Once].
Local Bus IDE adapter	Both (Fixed parameter)	Sets whether or not to use the IDE adapter.
Mouse Controller	• Disabled • Enabled • Auto Detect (at the time of purchase)	Sets whether or not to use the mouse connected to the mouse port.
SCSI Controller	Channel A & B (Fixed parameter)	Sets whether to enable or disable the onboard SCSI controller.
SCSI Option ROM Scan	• Disabled • Enabled (at the time of purchase)	Sets whether or not to initialize the extended ROM.
LAN Controller	Enabled (Fixed parameter)	Sets whether to enable or disable the onboard LAN controller.
LAN Remote Boot	• Disabled (at the time of purchase) • PXE	Sets whether or not to perform a network boot. This function allows booting the server via the network. It is used for remote installation of the OS, etc.

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8.2.7 PCI Configuration Submenu

Configures the PCI device.

```
                    PhoenixBIOS Setup Utility

    Main    Advanced    Security    Server    Exit

              PCI Configuration              Item Specific Help

  > PCI SLOTS Configuration:
  > PCI IRQ   Configuration:




  F1   Help      ↑↓  Select Item    -/+    Change Values      F9   Setup Defaults
  Esc  Exit      ←→  Select Menu    Enter  Select > Sub-Menu  F10  Save and Exit
```

table: Items on the PCI Configuration Submenu

Item	Setting	Description
PCI SLOTS Configuration	Configures the PCI slots. Press the [Enter] key to display the [PCI SLOTS Configuration] submenu window. After purchasing a diskless type, when installing a RAID card such as PG-142E3 in PCI Slot 1 to connect an internal hard disk unit, change the setting for [PCI slot1 Configuration Option ROM SCAN] to [Enabled].	
PCI Slot 1 Configuration Option ROM SCAN	• Enabled • Disabled (at the time of purchase)	Sets whether or not to initialize the extended ROM in each PCI slot. This server has five slots.
PCI Slot 2 Configuration Option ROM SCAN		
PCI Slot 3 Configuration Option ROM SCAN		
PCI Slot 4 Configuration Option ROM SCAN		
PCI Slot 5 Configuration Option ROM SCAN		
PCI IRQ Configuration	Sets PCI IRQs for the PCI slots. Press the [Enter] key to display the [PCI IRQ Configuration] submenu window.	
PCI IRQ Line 1–8	Auto (Fixed parameter)	Sets the PCI IRQ.

8.2.8 Advanced System Configuration Submenu

This menu performs CPU, memory and USB related settings.

```
                        PhoenixBIOS Setup Utility

   Main      Advanced     Security     Server     Exit

            Advanced System Configuration          Item Specific Help

   PCI Bus Parity Checking:      [Enabled]

   Memory Redundancy:            [Disabled]
   Remap PCI Memory Gap:         [Disabled]

   CPU Mismatch Detection:       [Enabled]
   CPU Timeout Counter:          [Disabled]
   CPU Frequency(GHz):           [Automatic]
   Hyper-Threading:              [Enabled]
   Limit CPUID functions:        [Disabled]
   CPU Thermal Management:       [Enabled]
   CPU Half Mode(C1E):           [Standard]
   NX Memory Protection:         [Disabled]
   CPU MC Status Clear:          [Next Boot]
   Enhanced SpeedStep:           [Disabled]
   CPU Clock Throttling Delay:   [No Delay]

   USB Host Controller:          [Enabled]
   USB2.0 Host Controller:       [Enabled]
   USB BIOS Legacy Support:      [Disabled]

   F1   Help    ↑↓  Select Item    -/+    Change Values      F9   Setup Defaults
   Esc  Exit    ←→  Select Menu    Enter  Select > Sub-Menu  F10  Save and Exit
```

table: Items on the Advanced System Configuration Submenu

Item	Setting	Description
PCI Bus Parity Checking	Enabled (Fixed parameter)	Sets whether to enable or disable the PCI bus parity checking.
Memory Redundancy	• Disabled (at the time of purchase) • Sparing	Sets whether or not to use spare memory.
Remap PCI Memory Gap	• Disabled (at the time of purchase) • Enabled	Sets whether to enable or disable the PCI Memory Gap. When installing 4GB or more memory, set to [Enabled].
CPU Mismatch Detection	Enabled (Fixed parameter)	Sets whether to enable or disable checking the CPU type and frequency.
CPU Timeout Counter	Disabled (Fixed parameter)	The server does not support this yet.
CPU Frequency (GHz)	Automatic (Fixed parameter)	Displays the options [Installed CPU frequency or less] and [Automatic].
Hyper-Threading	• Disabled • Enabled (at the time of purchase)	Sets whether or not to run one CPU as a dual-processing CPU. The setting [Enabled] may enhance processing performance by allowing maximum use of the processor resources.
Limit CPUID functions	Disabled (Fixed parameter)	Configures the CPU internal setting.
CPU Thermal Management	Enhanced (Fixed parameter)	Configures the CPU internal setting. This item is displayed only when using the optional 3.6GHz CPU.
CPU Halt Mode (C1E)	Standard (Fixed parameter)	Configures the CPU internal setting.

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table: Items on the Advanced System Configuration Submenu

Item	Setting	Description
NX Memory Protection	Disabled (Fixed parameter)	Configures the CPU internal setting.
CPU MC Status Clear	Next Boot (Fixed parameter)	Configures the CPU internal setting.
Enhanced SpeedStep	Disabled (Fixed parameter)	Configures the CPU internal setting. This item is displayed only when using the optional 3.6GHz CPU.
CPU Clock Throttling Delay	No Delay (Fixed parameter)	Sets the time delay after which the CPU moves to throttling when it overheats.
USB Host Controller	• Disabled • Enabled (at the time of purchase)	Sets whether or not to use the USB host controller.
USB 2.0 Host Controller	• Disabled • Enabled (at the time of purchase)	Sets whether to enable or disable the USB 2.0 host controller.
USB BIOS Legacy Support	• Disabled (at the time of purchase) • Enabled	Sets whether to enable or disable the USB connected devices also in a DOS environment. This item cannot be selected when [USB Host Controller] is set to [Disabled].

8.2.9 Power On/Off Submenu

Configures power On/Off settings.

```
                        PhoenixBIOS Setup Utility

   Main    Advanced    Security    Server    Exit

           Advanced System Configuration          Item Specific Help

   Power Off Source
     Software:                [Enabled]
     Power Button:            [Enabled]

   Power On Source            [Bios Controlled]
     Remote:                  [Enabled]
     LAN:                     [Enabled]
     Wake up Timer:           [Disabled]
       Wake up Time:          [00:00:00]
       Wake up Mode:          [Dally]

   Power Failure Recovery:    [Previous State]


   F1   Help     ↑↓  Select Item    -/+    Change Values     F9   Setup Defaults
   Esc  Exit     ←→  Select Menu    Enter  Select > Sub-Menu  F10  Save and Exit
```

table: Items on the Power On/Off Submenu

Item	Setting	Description
Power Off Source		
Software	• Disabled • Enabled (at the time of purchase)	Sets whether or not to enable the power to be turned off using a program or the operating system.
Power Button	• Disabled • Enabled (at the time of purchase)	Sets whether or not to allow the use of the power switch for turning the power off, when the ACPI function is disabled.
Power On Source	• BIOS Controlled (at the time of purchase) • ACPI Controlled	Configures the power-on setting.
Remote	• Disabled • Enabled (at the time of purchase)	Sets whether or not the power is turned on when the modem (connected to the serial port) receives a ring signal.
LAN	• Disabled • Enabled (at the time of purchase)	Sets whether or not to enable the power to be turned on via LAN.
Wake Up Timer	Disabled (Fixed parameter)	Sets whether or not the power is turned on at a certain time or after a certain time has passed. A separate program is necessary for setting startup time.
Wake Up Time	Displays the startup time when using "Wake Up Timer".	
Wake Up Mode	Displays the startup mode when using "Wake Up Timer".	

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table: Items on the Power On/Off Submenu

Item	Setting	Description
Power Failure Recovery	• Always On • Always Off • Previous State (at the time of purchase)	Sets whether to turn the power on or off after a temporary main power outage due to power interruption, etc. **Note:** ▶ For UPS scheduled operation, set to [Always On]. Otherwise, the power may not be turned on at the specified time.

8.2.10 IPMI Submenu

Configures server management settings.

```
                    PhoenixBIOS Setup Utility

   Main      Advanced      Security    Server    Exit
─────────────────────────────────────────────────────────────
                        IPMI                  Item Specific Help

   SEL Load                  nn%
   Clear System Event Log    [Disabled]
   Event Log Full Mode       [Overwrite]
   BMC Time Sync             [Enabled]
 > System Event Log
 > SDRR Browser
 > LAN Setting




─────────────────────────────────────────────────────────────
 F1   Help     ↑↓  Select Item   -/+    Change Values      F9  Setup Defaults
 Esc  Exit     ←→  Select Menu   Enter  Select > Sub-Menu  F10 Save and Exit
```

table: Items on the IPMI Submenu

Item	Setting	Description
SEL Load	Displays the usage of event log space as a percentage.	
Clear System Event Log	• Disabled (at the time of purchase) • Enabled	Sets whether or not to clear the event log.
Event Log Full Mode	• Overwrite (at the time of purchase) • Maintain	Sets whether or not to overwrite the event log when space available for it becomes full. **Note:** ▶ Changing this setting deletes the existing event log. Before making changes, refer to "9.3.1 How to Use Server Management Tools" (→pg.280) for saving the event log.
BMC Time Sync	Enabled (Fixed parameter)	Synchronizes the internal clock of the Baseboard Management Controller (BMC) with the system time.
System Event Log	Displays the system event logs. Press the [Enter] key to display the system event log window. Display previous and subsequent entries using [+] [-] keys.	
SDRR Browser	Displays sensor information. The SDRR Browser is displayed by pressing [Enter].	

table: Items on the IPMI Submenu

Item	Setting	Description
LAN Setting	Configure the network. Press the [Enter] key to display the [LAN Setting] submenu. Set the following items.	
Local IP address	-	Set the IP address of the onboard LAN. **Note:** ▸ Set an IP address different from that in OS settings.
Subnet mask	-	Set the subnet mask.
Gateway address	-	Set the default gateway.

8.2.11 Security Menu

The [Security] menu sets the security options.

```
                    PhoenixBIOS Setup Utility

   Main    Advanced    Security    Server    Exit

                                              Item Specific Help
  Setup Password          Not installed
  System Password         Not installed

  Set Setup Password:     [Press Enter]
  Setup Password Lock:    [Standard]
  Set System Password:    [Press Enter]
  System Password Mode:   [System]

  System Load:            [Standard]
  Setup Prompt:           [Enabled]
  Virus Warning:          [Disabled]

  Diskette Write:         [Enabled]
  Flash Write:            [Enabled]

  F1  Help   ↑↓ Select Item   -/+   Change Values    F9  Setup Defaults
  Esc Exit   ←→ Select Menu   Enter Select > Sub-Menu F10 Save and Exit
```

table: Items on the Security Menu

Item	Setting	Description
Setup Password	Displays whether a user password (setup password) is set or not. • Not Installed: A password has not been set. • Installed: A password has been set.	
System Password	Displays whether an administrator password (system password) is set or not. • Not Installed: A password has not been set. • Installed: A password has been set.	
Set Setup Password	Sets a setup password. Setting a setup password makes it necessary to enter the password in order to start the BIOS Setup Utility. Press the [Enter] key to display the password input window. Enter the setup password. For more details, refer to "9.4.2 Security against Unauthorized Use" (→pg.285).	
Setup Password Lock	• Standard (at the time of purchase) • Extended	Sets the scope protected by the setup password. This setting is possible when a setup password is specified.

table: Items on the Security Menu

Item	Setting	Description
Set System Password	Sets a system password. Setting a system password makes it necessary to enter the password in order to access this server. A setup password must be specified. Press the [Enter] key to display the password input window. Enter the setup password. For more details, refer to "9.4.2 Security against Unauthorized Use" (→pg.285).	
System Password Mode	• System (at the time of purchase) • Keyboard	Sets the scope protected by the system password. This setting is possible when a setup password and system password are both specified.
System Load	• Standard (at the time of purchase) • Diskette/CDROM Lock	Sets whether to enable or disable system startup from a floppy disk or CD-ROM.
Setup Prompt	• Disabled • Enabled (at the time of purchase)	Sets whether or not to display a setup message "<F2>BIOS Setup/<F12>BOOT Menu" on the [POST] window during system startup.
Virus Warning	Disabled (Fixed parameter)	Sets whether or not to check the boot sector of the hard disk drive after the previous system startup. If the boot sector is changed without a clear reason, it is necessary to scan the system for computer viruses with a virus detection program.
Diskette Write	• Disabled • Enabled (at the time of purchase)	Sets whether or not to allow writing on a floppy disk.
Flash Write	• Disabled • Enabled (at the time of purchase)	Sets whether or not to allow writing on the BIOS Flash ROM.

8.2.12 Server Menu

The [Server] menu sets the server options.

```
                    PhoenixBIOS Setup Utility

   Main      Advanced    Security    Server     Exit

   O/S Boot Timeout:        [Disabled]                  Item Specific Help
     Action:                [Reset]
     Timeout Value:         [0]
   ASR&R Boot Delay:        [2]
   Power Cycle Delay:       [5]
   Boot Retry Counter:      [3]
   Diagnostic System:       [Disabled]
   Temperature Monitoring:  [Disabled]
   Memory Scrubbing:        [Enabled]


   > CPU Status
   > Memory Status
   > Console Redirection
   > RomPilot


   F1   Help    ↑↓  Select Item    -/+    Change Values     F9   Setup Defaults
   Esc  Exit    ←→  Select Menu    Enter  Select > Sub-Menu  F10  Save and Exit
```

table: Items on the Server Menu

Item	Setting	Description
O/S Boot Time out	• Disabled (at the time of purchase) • Enabled	Sets whether to enable or disable the OS Boot Monitoring function, when ServerView is installed to the OS. When this function is enabled, if for some reason booting the operating system is interrupted, the system will automatically restart. The OS Boot Monitoring function can also be enabled or disabled from ServerView. **Note:** ▸ If ServerView is not installed to the OS, be sure to set to [Disabled]. If the setting is enabled, the server may automatically turn off or restart improperly. ▸ Even when ServerView is installed to the OS, if starting the system while the ServerStart CD-ROM or DOS floppy disk is inside, be sure to disable the OS Boot Monitoring function. If the system is started with this function enabled, the server may automatically turn off or restart improperly. ▸ When setting this function, refer to "ServerView User's Guide" to fully learn about its specifications, in order to use it properly with the correct settings.
Action	• Continue • Reset (at the time of purchase) • Power Cycle	Sets the operation when the OS did not boot successfully within the time set with the [Timeout Value] setting.
Timeout Value	• 0 (at the time of purchase) • 1–100	Sets the timeout period in minutes.

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table: Items on the Server Menu

Item	Setting	Description
ASR&R Boot Delay	• 2 (at the time of purchase) • 1–30	Sets the standby time for startup after shutdown due to trouble (such as overheating) in minutes. The system restarts after the set standby time.
Power Cycle Delay	5 (Fixed parameter)	Sets the time until the server is turned on after it is turned off.
Boot Retry Counter	• 3 (at the time of purchase) • 0–7	Sets the maximum number of retries to boot the operating system within the range of 0 to 7.
Diagnostic System	Disabled (Fixed parameter)	Sets whether or not to diagnose the BootDevice when restarting with ASR&R.
Temperature Monitoring	Disabled (Fixed parameter)	Sets whether or not the server can be turned on when the temperature is not in its operating environment range (10-35 °C).
Memory Scrubbing	Enabled (Fixed parameter)	Sets whether or not to correct errors of memory space that is currently not used by the OS or application programs.
CPU Status	Press the [Enter] key to display the "■ CPU Status Submenu" (→pg.248) window.	
Memory Status	Press the [Enter] key to display the "■ Memory Status Submenu" (→pg.248) window.	
Console Redirection	Press the [Enter] key to display the "■ Console Redirection Submenu" (→pg.249) window.	
Rom Pilot	Press the [Enter] key to display the "■ RomPilot Submenu" (→pg.249) window.	

■ CPU Status Submenu

This submenu sets whether or not to allow the use of the installed CPU.

table: Items on the CPU Status Menu

Item	Setting	Description
CPU 0 Status	Enabled (Fixed parameter)	Sets whether or not to allow the use of CPUs installed in CPU Sockets 0 and 1.
CPU 1 Status		

■ Memory Status Submenu

This submenu sets whether or not to allow the use of the installed memory.

table: Items on the Memory Status Menu

Item	Setting	Description
Memory Module 0A	Enabled (Fixed parameter)	Sets whether or not to allow the use of memory in Memory Slots 0A to 2B.
Memory Module 0B		
Memory Module 1A		
Memory Module 1B		
Memory Module 2A		
Memory Module 2B		

■ Console Redirection Submenu

This submenu configures detailed settings for console redirection.

table: Items on the Console Redirection Menu

Item	Setting	Description
Console Redirection	• Disabled (at the time of purchase) • Enabled	Sets whether to enable or disable console redirection. When set to [Enabled] the following parameters appear. Set each of them. If set to [Disabled], the items are not displayed.
Port	• Serial1 (at the time of purchase) • Serial2	Sets the serial port to be used for console redirection.
Media Type	• Serial (at the time of purchase) • LAN	Sets the connection type for console redirection.
Baud Rate	• 1200 • 2400 • 4800 • 9600 (at the time of purchase) • 19.2K • 38.4K • 57.6K • 115.2K	Sets the speed of the console redirection connection (in bps).
Protocol	• VT100 • VT100,8bit • PC-ANSI,7bit • PC-ANSI • VT100+ (at the time of purchase)	Sets the console type for console redirection.
Flow Control	• None • XON/XOFF • CTS/RTS (at the time of purchase)	Sets flow control for console redirection.
Mode	• Standard • Enhanced (at the time of purchase)	Sets the range of use for console redirection.

■ RomPilot Submenu

The RomPilot is a remote console BIOS extended function.
This server cannot use this.

table: Item on the RomPilot Menu

Item	Setting	Description
RomPilot Support	Disabled (Fixed parameter)	Sets whether or not to use RomPilot.

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8.2.13 Exit Menu

This menu exits the BIOS Setup Utility.

```
                        PhoenixBIOS Setup Utility

     Main      Advanced     Security     Server     Exit

     Save Changes & Exit                              Item Specific Help
     Discard Changes & Exit
     Get Default Values
     Load Previous Values




     F1   Help      ↑↓   Select Item    -/+    Change Values      F9   Setup Defaults
     Esc  Exit      ←→   Select Menu   Enter   Execute Command   F10   Save and Exit
```

Select the option for handling BIOS settings when exiting the utility.

table: Items on the Exit Menu

Item	Description
Save Changes & Exit	Save the current settings and exit the BIOS Setup Utility. After it exits the server reboots.
Discard Changes & Exit	Exits the BIOS Setup Utility without saving current settings. Previously saved settings remain valid.
Get Default Values	Returns to the server's initial values for all items. However, since there are items that differ from the setting values at the time of purchase, after returning to initial settings, it is necessary to change to the settings at the time of purchase.
Load Previous Values	Sets all items to the values before the last changes by reading from CMOS. Current setting values are discarded.

⌕ POINT

Initial BIOS settings and settings at the time of purchase
▶ Some items of the initial BIOS settings and settings at the time of purchase are different. When returning to the initial BIOS settings, set the following items to the values they were at the time of purchase:
   • "8.2.4 Boot Options Submenu" (→pg.236) of the Main menu
     [POST Errors], [Fast Boot], [Quiet Boot], [MultiBoot for HDs]
   • "8.2.6 Peripheral Configuration Submenu" (→pg.238) of the [Advanced] menu
     [Serial 1], [Serial 2]
   • "8.2.8 Advanced System Configuration Submenu" (→pg.241) of the [Advanced] menu
     [CPU Timeout Counter], [CPU Halt Mode (C1E)], [NX Memory Protection], [Enhanced SpeedStep]

8.3 SCSI Setup Utility

This section explains settings for the SCSI Setup Utility and items regarding each setting.

8.3.1 Starting and Exiting the SCSI Setup Utility

The following explains how to start and exit the SCSI Setup Utility.

■ How to Start the SCSI Setup Utility

1 During server startup (POST), press the [Ctrl] + [C] keys while the message "Press Ctrl-C to Start Symbios Configuration Utility..." is displayed on the screen.
The SCSI Setup Utility starts up.

```
LSI Logic MPT SCSI Setup Utility Version MPT BIOS-IME-n.nn.nn
<Boot Adapter List> <Global Properties>

LSI Logic Host Bus Adapters

Adapter      PCI    Dev/    Port     IRQ    NVM    Boot    LSI Logic    RAID
             Bus    Func    Number                 Order   Control      Status

<1020/1030   2      40>     3000     11     Yes    0       Enabled      --
<1020/1030   2      41>     3400     9      Yes    1       Enabled      --




F1 =HELP              ArrowKeys=Select Item       -/+ =Change [Item]
Esc=Abort/Exit        Home/End=Select Item        Enter=Excute <Item>
F2 =Menu
```

2 Set items as necessary.

● Changing Settings

1 Use the [↑] [↓] [←] [→] keys to select the item whose setting is to be changed.
The [↓] and [↑] keys move the cursor up and down, and the [←] and [→] keys move the cursor to the left and right.

2 Press the [Enter] key.
When an item with a submenu is selected, the submenu appears. When an item without a submenu is selected, the setting is changed.

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3 Operations on the submenu are the same as those on the [Main] menu.

Use the [↑] [↓] [←] [→] keys to select the item whose setting is to be changed. Press the [Enter] key.

The setting to be changed is displayed.

For the setting to be changed, use the [↓] [↑] or [+] [–] keys to change the setting and press the [Enter] key.

● **Roles of Keys**

table: List of Key Operations on the SCSI Setup Utility Window

Key	Roles of key
[↑] [↓] [←] [→] [Home / End]	Moves the cursor.
[+] [–]	Changes the setting value of an item.
[Enter]	Selects an item. When the item has a submenu, the submenu is displayed.
[Esc]	Returns to the previous menu. Pressing this key on the SCSI Setup Utility initial screen exits the SCSI Setup Utility.
[F2]	Pressing this key from the [Main] menu moves the cursor to [Boot Adapter List] or [Global Properties].

■ **How to Exit the SCSI Setup Utility**

1 Press the [Esc] key from the [Main] menu.

The [Exit] menu window appears.

2 Select the operation and press the [Enter] key.

To save configuration changes before exiting:

Select [Save Changes then exit this menu] and press the [Enter] key.

The changes are saved and the SCSI Setup Utility closes.

To exit without saving configuration changes:

Select [Discard changes then exit this menu] and press the [Enter] key.

The changes are discarded and the SCSI Setup Utility closes.

8.3.2 Main Menu

The [Main] menu is displayed when you start the SCSI Setup Utility.

```
LSI Logic MPT SCSI Setup Utility Version MPT BIOS-IME-n.nn.nn
<Boot Adapter List> <Global Properties>

LSI Logic Host Bus Adapters

Adapter      PCI   Dev/   Port    IRQ   NVM   Boot    LSI Logic   RAID
             Bus   Func   Number              Order   Control     Status

<1020/1030   2     40>    3000    11    Yes   0       Enabled     --
<1020/1030   2     41>    3400    9     Yes   1       Enabled     --




F1 =HELP           ArrowKeys=Select Item      -/+ =Change [Item]
Esc=Abort/Exit     Home/End=Select Item       Enter=Excute <Item>
F2 =Menu
```

Use the [↓] [↑] [←] [→] keys to move the cursor to the menu where you want to change settings and press the [Enter] key. The selected menu appears.

table: Items on the Main Menu

Item	Description
Adapter	Displays the name of the SCSI controller. On this server, "1020/1030" is displayed.
PCI Bus	Displays the number of the PCI bus where the SCSI controller is connected.
Dev/Func	Displays the PCI device/function of the SCSI controller. The five upper bits represent the device and the three lower bits represent the function.
Port Number	Displays the I/O port address of the SCSI controller.
IRQ	Displays the IRQ (IRQ level) of the SCSI controller.
NVM	Displays whether or not the SCSI controller has NVRAM for storing settings. On this server, "Yes" is displayed.
Boot Order	Displays the boot order of SCSI controllers. When the server starts up, startable SCSI devices connected to SCSI cards (controllers) are searched for in ascending numerical order. SCSI devices start up in order of detection.
LSI Logic Control	Displays whether or not the SCSI controller can use standard device drivers.
RAID Status	The server does not support the RAID function.

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8.3.3 Boot Adapter List

A list of Boot Adapters is displayed. Press the [F2] key from the [Main] menu window, select [Boot Adapter List] and press the [Enter] key to display the window.

```
LSI Logic MPT SCSI Setup Utility Version MPT BIOS-IME-n.nn.nn

Boot Adapter List
Insert=Add an adapter    Delete=Remove an adapter


         Adapter    PCI    DEV/    Boot     Current    Next
                    Bus    Func    Order    Status     Boot
         1020/1030   2      40     [0]      On         [ON]
         1020/1030   2      41     [0]      On         [ON]


Hit Insert to select an adapter from this list:
         <1020/1030   2      40>
         <1020/1030   2      41>






F1 =HELP            ArrowKeys=Select Item        -/+ =Change [Item]
Esc=Abort/Exit      Home/End=Select Item         Enter=Excute <Item>
```

table: Items on the Boot Adapter List Window

Item	Setting	Description
PCI Bus	Displays the number of the PCI bus where the SCSI controller is connected.	
DEV/Func	Displays the PCI device/function of the SCSI controller.	
Boot Order	0 (Fixed parameter)	Sets the startup priority for SCSI controllers.
Current Status	Displays whether the SCSI controller BIOS is enabled or disabled.	
Next Boot	ON (Fixed parameter)	Sets whether to enable or disable the SCSI controller BIOS at the next startup.

8.3.4 Global Properties

A list of Boot Adapters is displayed. Press the [F2] key from the [Main] menu window, select [Global Properties] and press the [Enter] key to display the window.

```
LSI Logic MPT SCSI Setup Utility Version MPT BIOS-IME-n.nn.nn

Global Properties

        Pause When Boot Alert Displayed    [No]
        Boot Information Display Mode       [Verbose]
        Negotiate with device              [Supported]
        Video Mode                         [Color]
        Support Interrupt                  [Hook interrupt,the Default]

        <Restore Defaults>




 F1 =HELP            ArrowKeys=Select Item      -/+ =Change [Item]
 Esc=Abort/Exit      Home/End=Select Item       Enter=Excute <Item>
```

table: Items on the Global Properties Window

Item	Setting	Description
Pause When Boot Alert Displayed	No (Fixed parameter)	Sets whether or not the SCSI device scan at startup stops when an error is detected.
Boot Information Display Mode	Verbose (Fixed parameter)	Sets whether or not to abridge the SCSI device information displayed on the startup screen.
Negotiate with devices	Supported (Fixed parameter)	Sets whether or not to set the transfer rate between the SCSI card and SCSI devices.
Video Mode	Color (Fixed parameter)	Sets the screen color scheme to color or black-and-white.
Support Interrupt	Hook interrupt the Default (Fixed parameter)	Sets whether or not to support interruption channels.
Restore Defaults	Reads default values for the controller.	

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8.3.5 Adapter Properties

Detailed configuration information of SCSI adapters on the SCSI bus is set. Press the [F2] key from the [Main] menu window, select [Adapter] and press the [Enter] key to display the window.

```
LSI Logic MPT SCSI Setup Utility Version MPT BIOS-IME-n.nn.nn

Adapter     Properties

Adapter   PCI    DEV/
          Bus    Func
1020/1030   2     40
1020/1030   2     41

     <Device Properties>
     <RAID Properties><Synchronize Whole Mirror>

     Host SCSI ID                  [ 7]
     SCSI Bus Scan Order           [Low to High(0..Max)]
     Removable Media Support       [None]
     CHS Mapping                   [SCSI Plug and Play Mapping]
     Spinup Delay(Secs)            [ 2]
     Secondary Cluster Server      [No]
     Termination Control           [Auto]

     <Restore Defaults>

 F1 =HELP              ArrowKeys=Select Item        -/+ =Change [Item]
 Esc=Abort/Exit        Home/End=Select Item      Enter=Excute <Item>
```

table: Items on the Adapter Properties Window

Item	Setting	Description
Host SCSI ID	7 (Fixed parameter)	Specifies the SCSI ID of the SCSI controller.
SCSI Bus Scan Order	Low to High (0..Max) (Fixed parameter)	Specifies the SCSI bus scan order during the startup.
Removable Media Support	None (Fixed parameter)	Sets whether or not the SCSI BIOS supports removable disk units such as MO drives.
CHS Mapping	SCSI Plug and Play Mapping (Fixed parameter)	Specifies the disk mapping method.
Spinup Delay (Secs)	• 2 (at the time of purchase) • 1–15	Specifies the interval between a server startup and the start of disk rotation.
Secondary Cluster Server	No (Fixed parameter)	Sets whether to enable or disable the secondary cluster server.
Termination Control	Auto (Fixed parameter)	Sets whether to enable or disable the terminator on the system board.
Restore Defaults	Reads default values for the controller.	

■ Device Properties Submenu

Select [Device Properties] in the [Adapter Properties] window and press the [Enter] key to display the submenu.

table: Items on the Device Properties Submenu

Item	Setting	Description
Restore Defaults	Reads default values for the controller.	
MT/Sec	• 80 (at the time of purchase) • 40 • 20 • 10 • 5 • 0	Sets the maximum transfer rate.
MB/Sec	Displays the maximum transfer rate.	
Data Width	• 16 (at the time of purchase) • 8	Specifies the maximum data transfer width.
Scan ID	• Yes (at the time of purchase) • No	Sets whether or not to scan this device at startup.
Scan LUNs > 0	• Yes (at the time of purchase) • No	Sets whether or not to scan LUN=1 and subsequent LUNs at startup.
DISCONNECT	• On (at the time of purchase) • Off	Sets whether or not to permit disconnection during command execution.
SCSI Timeout	10	Specifies the timeout period during command execution.
QUEUE TAGS	• On (at the time of purchase) • Off	Sets whether or not to issue multiple commands to devices at the same time.

■ RAID Properties Submenu

Select [RAID Properties] in the [Adapter Properties] window and press the [Enter] key to display the submenu.

table: Items on the RAID Properties Submenu

Item	Setting	Description
Array Disk?	No (Fixed parameter)	Sets whether or not to configure an array. The server does not support this yet. Cannot be set.
Hot Spare	No (Fixed parameter)	Sets whether or not to configure a hot spare. The server does not support this yet. Cannot be set.

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8.3.6 Formatting Hard Disks Physically

On this server, physical formatting cannot be performed from SCSI Setup Utility menus. When a hard disk must be formatted physically, perform the following procedures to run the SCSI Low-Level Format Utility.

IMPORTANT

- ▶ Physical format deletes all data on the selected hard disk. Make a backup before using this function.
- ▶ Physical format of a hard disk takes time. Once started, it cannot be aborted. Perform it when you have enough time.
- ▶ Do not turn off or reset the server during physical formatting. Otherwise, the hard disk may be damaged.
- ▶ The "Server Management Tools" disk attached to the server is required. Please have it ready.

■ Performing Physical Format

1 Insert the "Server Management Tools" disk supplied with this server and turn the server on.

2 When a command prompt is displayed, enter the following command and press the [Enter] key.

   A:\SMTOOL\>ASPIFMT.EXE

The SCSI Low-Level Format Utility starts up.

3 Use the [↑] [↓] keys to select the hard disk to be formatted physically. Press the [Space] key to set it.

4 Press the [Tab] key to move to the [Format] button. Press the [Space] key.

A confirmation message is displayed.

5 Read the message, select [Format] again, and press the [Space] key.

Physical formatting starts.

When the physical formatting completes, a completion message appears.

6 Check that [Failed Formatting Drive(s)] indicates "none". Select [Exit] and press the [Space] key.

7 Select [Exit] again and press the [Space] key.

The physical formatting has completed when a command prompt appears.

The server can be turned off.

Chapter 9

Operation and Maintenance

9

This chapter explains the necessary operations after starting to use this server as well as daily care and maintenance.

9.1 Daily Maintenance

This section explains how to check the status of the operating server, as well as how to perform daily maintenance.

9.1.1 Checking the Server Condition

■ Checking Each LED

This server is equipped with LEDs that display various hardware conditions.
Check the server status via each LED after starting the server. For positions and functions of each status LED, refer to "1.3 Component Names and Functions" (→Pg.22).

■ Server Monitoring Tool (ServerView)

ServerView is software to monitor that the server hardware is in a normal state to protect important server resources. When using ServerView, the server hardware is monitored all the time. If an error that could cause trouble is detected, the administrator is notified in real-time for early detection. This allows the server administrator to remove a system error early and avoid trouble.
For an overview and installation of ServerView and other high reliability tools, refer to "1.2.2 High Reliability Tools" (→Pg.19) and "Chapter 6 High Reliability Tool" (→Pg.167).

■ Replacing a PSU or System Fan when the Power Supply Conversion Kit is Used

Since the PSUs and system fans are redundant when the Power Supply Conversion Kit is used, the system will not go down if one of them fails.

● When a PSU Fails

Use the status LED of the PSU or ServerView to check the PSU that failed. The faulty PSU can be replaced without turning off the server. Refer to "Contact Information" in "Start Guide", and contact your maintenance engineer and have it replaced as soon as possible. After removing the PSU, replace it with a new unit. Do not continue to run the server with the PSU slot empty.

> ⚠ WARNING   Electric Shock ⚡ • When removing the PSU, do not insert your hand into the PSU slot. Doing so can cause electric shock.

● **When a System Fan Fails**

To verify the position of the faulty system fan, use ServerView or check the status LED of the system fan in the server. For faulty fans, refer to "Contact Information" in "Start Guide", and contact your maintenance engineer and have it replaced as soon as possible.

[CPU fan]   [System fan]

LED

On: Nomal
Off: Failure or uninstalled
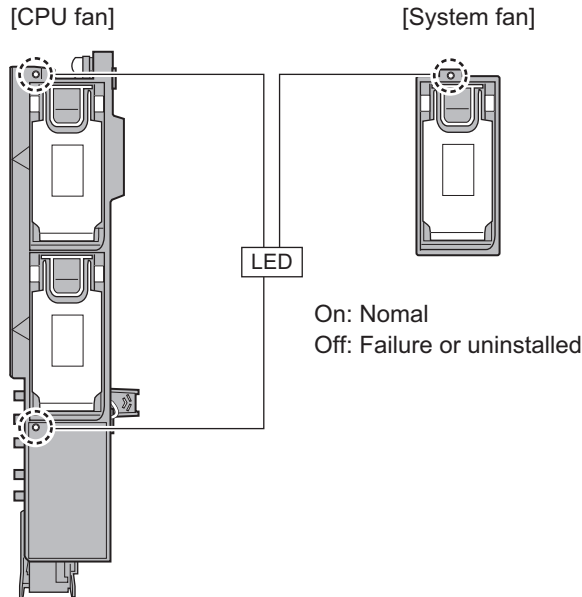
9.1.2 Cleaning

⚠ **WARNING**   ⚡ Electric Shock • Before cleaning, turn off the server and unplug the power cables from the outlets. Also power off peripherals and disconnect them from the server. Failure to do so can cause electric shock (→"1.4.4 Turning Off the Server" (Pg.36)).

■ Cleaning the Server

Wipe with a soft, dry cloth. For stains that do not come off with a dry cloth, wipe with a cloth lightly dampened with a mild detergent. Once the stain has been removed, wipe off any remaining detergent with a cloth dampened with water. When wiping the server, be sure that no moisture enters the server machine.
Do not use solvents. Use a mild detergent only. Otherwise, the server may be damaged.
Use a vacuum cleaner periodically to prevent dust buildup in ventilation holes.

POINT

▸ In dusty environments, dust piles up on the front and rear panels of the server over short periods. Install the server in a different location to avoid failures.

■ Cleaning the Server Interior

In dusty environments, dust deposits in the server. Dust deposits may cause a server failure, fire, or electric shock. To keep the PRIMERGY server in good condition, use a vacuum cleaner periodically to remove dust deposits.

₽POINT

Cleaning components

▶ CPUs: Dust deposits must be removed because it will impair the cooling performance.
▶ Fans: Remove dust from and around the fans.
▶ Memory/expansion cards: Remove dust between memory modules and between expansion cards. Remove dust from the connector before adding a memory module or an expansion card.
▶ Internal hard disk units/5-inch internal devices: Remove dust deposits from units and devices. Tape devices are particularly susceptible to dust and may cause failures. Install them in a clean environment.

⚠WARNING   Electric Shock • Do not disassemble the PSU when cleaning the server interior. Doing so can cause failures or electric shock.

IMPORTANT

▶ Be careful when removing components such as CPUs, memory modules, or hard disk units. Be sure to install parts and cables in the original position.
▶ Leaving dust brushed off or blown with air in the server can cause failure. Be sure to take it out of the server.

■ Cleaning the Keyboard

Wipe with a soft, dry cloth.

■ Cleaning the Mouse

Wipe the surface with a soft, dry cloth. If the tracking ball does not spin or roll smoothly, remove the ball and clean it.

● Cleaning Method

1 Remove the cover from the mouse.

Remove the cover under the mouse by rotating it in the direction of the arrow.
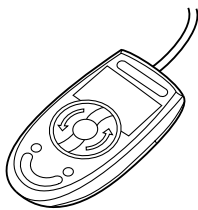
2 Remove the ball and rinse it with water.

Flip the mouse over to remove the ball. Afterwards, wash it with water.
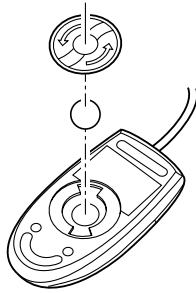
3 Clean the inside of the mouse.

Wipe the inside of the mouse, the roller, and the bottom cover with a damp cloth.

Roller
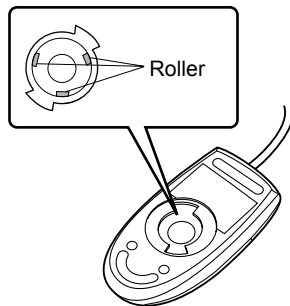
4 Insert the ball and apply the cover.

After the ball and inside of the mouse are dry, insert the ball and apply the cover.

■ Cleaning the Floppy Disk Drive

Prolonged use of the floppy disk drive accumulates dust on the device head (the part which reads/writes data). A dirty head can impair the ability to read/write data to/from a floppy disk correctly.
Clean the head once every three months.

● Cleaning Method

1 Insert the cleaning disk into the floppy disk drive.

2 Access the floppy disk drive from the OS.

• For Windows, access it via Explorer.

• For Linux, execute the "mount" or "dd" commands of the floppy disk drive.

The process is completed when an error message such as indicating that the disk cannot be read is displayed.

3 Remove the cleaning disk from the floppy disk drive.

Operation and Maintenance

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■ Optional Devices

For cleaning optional devices, refer to "PRIMERGY ServerBooks" supplied with the server, and "Supplement" supplied with options.

9.2 Troubleshooting

This section explains the resolutions when the server is not running properly or when error messages are displayed.

For each situation, refer to the following. If the problem is not resolved after performing the following troubleshooting, refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.

When contacting your maintenance engineer, refer to "9.9.2 Contacting Maintenance Support" (→Pg.298) and collect the required information.

- Hardware problems: "9.2.1 Hardware Troubleshooting"
- Error messages: "9.2.2 Error Messages"
- Software problems: "9.2.3 Software Troubleshooting"

9.2.1 Hardware Troubleshooting

This section explains hardware related troubleshooting. If it does not operate properly or if a failure is suspected, check the following.

For optional devices, refer to "PRIMERGY ServerBooks" supplied with the server, and "Supplement" supplied with options.

■ Server

● The server does not power on, or the power LED on the front of the server does not light up.

Check to see whether the power cable is properly connected to the outlet. For instructions on connecting the power cable, refer to "Start Guide".

● The access LED does not light up.

When using the RAID Ctrl 2-Channel 128MB w/ BBU (PG-142E3), the hard disk access LED does not turn on. Check the hard disk access LED of the internal disk unit.

If the RAID Ctrl 2-Channel 128MB w/ BBU (PG-142E3) is not being used, there may be a failure in the server. Refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.

When contacting your maintenance engineer, refer to "9.9.2 Contacting Maintenance Support" (→Pg.298) and collect the required information.

● When an expansion card is added, other expansion cards or onboard devices are not recognized.

Install the drivers for the expansion cards or onboard devices that are not recognized.

● **The server does not recognize the connected RS-232C device.**

- Check whether serial port 1 has been set to be used as a server management port. Through configuration with the BIOS Setup Utility, Serial Port 1 on the server can be used as a server management port. In this configuration, RS-232C devices cannot be connected to Serial Port 1. For details about how to use the server management port, refer to "Appendix C Using the Server Management Port" (→Pg.306)
- In this server, when performing console redirection using the ServerView RemoteControleService, connect the UPS and external modems, etc. to serial connector 2 (COM2). For details about the RemoteControlService function, refer to "Chapter 5 Using RemotConsoleService" in the "ServerView User's Guide".

● **A temperature warning is output to the hardware event log and OS event log, or ServerView issues a notification of a temperature warning such as by a popup message.**

The above log is output or the above notification is issued by ServerView when the ambient temperature is within 30 to 35 °C, which is near the upper limit of the temperature boundaries (10 to 35 °C). This is to notify the administrator before the ambient temperature actually exceeds the range of the temperature boundaries.
Although continued use within the temperature boundaries poses no problems within itself, reconsider the surrounding environment conditions if this log is output or if ServerView issues this notification.

● **Serial ports are not recognized properly in Device Manager.**

This may occur when the Serial 1 and Serial 2 settings are changed with "8.2.6 Peripheral Configuration Submenu" (→Pg.238) in the [Advanced] menu of the BIOS Setup Utility.
If this occurs, delete all serial ports in Device Manager and restart the system.

● **POST stops, generating the "Expansion ROM not initialized..." message.**

Change [Reset Configuration Data] on "8.2.5 Advanced Menu" (→Pg.237) to [Yes] in the BIOS Setup Utility.

■ Display

● **The display does not power on.**

Check to see whether the power cable of the display is properly connected to the outlet. For details, refer to "Start Guide" or the manual of the display.

● **Nothing is displayed on the screen.**

- Check to see whether the display cable is connected properly. If it is not connected, turn the server off and then connect the cable. For the connection location, refer to "Start Guide".
- The brightness volume or contrast volume of the display may not be adjusted correctly. If they need to be adjusted, perform the necessary adjustments.
  For details, refer to the manual of the display.
- There may be an error in the system area of the memory. Refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.

● **Typing the keyboard does not display any characters, or the mouse cursor does not move.**

Check to see whether the keyboard and mouse are connected properly. If they are not connected, turn the server off and then connect the cables to the server. For the connection location, refer to "Start Guide".

● **The screen shakes.**

If a device that produces a strong magnetic field such as a television or speaker is near the display, place them further away from the display.
The display may also shake if a nearby cell-phone receives a call. Do not use a cell-phone near the display.

● **The screen display is distorted.**

The screen display may be distorted during 3D program execution or the 3D program may terminate abnormally. If this occurs, set Color quality in screen properties to anything other than True Color (32 bits).

■ Floppy Disk Drive

● **Cannot read or write to the floppy disk.**

The head may be dirty. Clean the drive using a cleaning disk. For cleaning methods, refer to "9.1.2 Cleaning" (→Pg.261).

● **Cannot write to the floppy disk.**

The write protection of the floppy disk may be applied.
Flip the switch on the disk to allow writing.

■ CD-ROM Drive Unit

● **Cannot read data.**

• Check to see whether the CD-ROM is inserted properly. If it is not inserted, correctly insert the CD-ROM so that the label is facing up.
• The CD-ROM may be dirty. If it is dirty, wipe it with a soft, dry cloth.
• The CD-ROM may be scratched or bent. If scratched or damaged, replace the CD-ROM.

● **The unit does not operate properly.**

Check to see whether the internal cable is connected properly. If it is not connected, correctly connect the internal cable.

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■ SCSI Device (Internal/External)

● The unit does not operate properly.

- Check to see whether the internal cable is connected properly. If it is not connected, correctly connect the internal cable. For the connection location, refer to "7.7.2 Installable 5-inch Internal Devices and Notes" (→Pg.215).
- For SCSI devices, check to see whether the SCSI ID and terminator are set correctly. If they are not set, correctly set the SCSI ID and terminator.

9.2.2 Error Messages

■ POST Error Messages

This section explains error messages of Power On Self Test (POST: a device check performed during the server startup).

If an error occurs during POST, the following messages are displayed.

◯POINT

- ▶ When checking/changing the settings of the BIOS Setup Utility, refer to "8.2 BIOS Setup Utility" (→Pg.231).
- ▶ For instructions on checking peripheral connections, refer to "Start Guide".
- ▶ For details on installing hardware options, refer to "Chapter 7 Installing Hardware Options" (→Pg.173).

table: List of POST Errors

Message	Description
Failure Fixed Disk 0 Failure Fixed Disk 1 Fixed Disk Controller Failure	The IDE device is abnormal. From the BIOS Setup Utility, check the [IDE Drive1 - 4] setting of the [Main] menu or the [Local Bus IDE adapter] setting of the [Advanced] menu -> [Peripheral Configuration] submenu. If the message still appears, the baseboard must be replaced. Refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.
Keyboard error Keyboard locked - Unlock key switch	The Keyboard is abnormal. Check to see whether the keyboard is connected properly. If the message still appears, the keyboard must be replaced.
Keyboard controller error	The keyboard controller is abnormal. Replace the keyboard or mouse. If the message still appears, the baseboard must be replaced. Refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.
Keyboard error nn Stuck Key nn	The key entry is invalid. If something is pressing the keyboard keys, remove it. ("nn" is a hexadecimal code representing a key.) Check to see whether the keyboard is connected properly. If the message still appears, the keyboard must be replaced.
Monitor type does not match CMOS - Run Setup	The baseboard is abnormal. It must be replaced. Refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.

table: List of POST Errors

Message	Description
Critical memory error occurred - system halted	The memory is abnormal. Power off the server and turn it back on. If the message still appears, check the error log and replace the faulty memory.
Extended RAM Failed at offset: nnnn	
System RAM Failed at offset: nnnn	
Shadow RAM Failed at offset: nnnn	
Memory type mixing detected	The installation configuration of the memory is wrong. Verify that the same type of memory is installed to the slots of the same bank. If the message displays even though the installation is correct, replace the memory.
Hot Spare Memory Feature could not be enabled	The hot spare memory function cannot be enabled. Check that all the memory modules that are installed are all of the same capacity. If the message still appears even though the installation is correct, the memory or baseboard must be replaced. Refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.
Correctable memory error in module x	The memory is abnormal. Replace the memory module that corresponds to "module x" (where x is the slot number).
Uncorrectable memory error in module x	
Memory decreased in Size	The memory is abnormal. Power off the server and turn it back on. If the message still appears, check the error log and replace the faulty memory.
One or more RDRAM devices are not used	The memory is abnormal. If memory that is not supported by this server is installed, replace it with supported memory.
One or more RDRAM devices have bad architecture/timing	
One or more RDRAM devices are disabled	
There are more than 32 RDRAM devices in the system	
Non Fujitsu Siemens Memory Module detected Warranty void!	The memory is abnormal. Check to see that the jumper pin settings or BIOS Setup Utility settings are correct. If the message still appears, the keyboard must be replaced. Refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.
System battery is dead - Replace and run SETUP	The battery is abnormal. Refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.
System CMOS checksum bad - Default configuration used	The CMOS setting is invalid. Correct the current settings with the BIOS Setup Utility or restore the settings at the time of purchase. If the message still appears, the keyboard must be replaced. Refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.
Password checksum bad- Passwords cleared	The set password is incorrect. Reset the password using the BIOS Setup Utility.
System timer error	The system clock is abnormal. Power off the server and turn it back on. If the message still appears, the keyboard must be replaced. Refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.
Real time clock error	The Real Time Clock (RTC) is abnormal. Start the BIOS Setup Utility and then enter the current time. If the message still appears, the keyboard must be replaced. Refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.

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table: List of POST Errors

Message	Description
Check date and time settings	The set date and time is invalid. Start the BIOS Setup Utility and then enter the current date and time. If the message still appears, the keyboard must be replaced. Refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.
Previous boot incomplete - Default configuration used	POST did not complete during the last startup. Be sure to perform the following operation. Failure to do so can result in the OS not starting or the server not operating correctly. 1. Start the BIOS Setup Utility. 2. From the [Exit] menu, select [Save Changes & Exit] and press the [Enter] key. The message "Save configuration changes and exit now?" is displayed. 3. Select [Yes] and press the [Enter] key. The BIOS Setup Utility closes and the server restarts.
Memory Size found by POST differed from EISA CMOS	EISA CMOS is abnormal. Power off the server and turn it back on. If the message still appears, the keyboard must be replaced. Refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.
CPU mismatch detected	The CPU frequency or the number of CPUs has changed. If the correct CPU is installed and the message is displayed, select [Yes] for the [Reset Configuration Data] setting under the [Advanced] menu of the BIOS Setup Utility. If the message still appears, the CPU or baseboard must be replaced. Refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.
Available CPUs do not support the same bus frequency- system halted	CPUs with varying frequencies are installed. Install the correct CPUs. If the message still appears, the keyboard must be replaced. Refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.
Diskette drive A error	The floppy disk drive is abnormal. Check to see whether the floppy disk drive cable is connected properly. Also check the settings of [Diskette A] or [Diskette B] from the [Main] menu of the BIOS Setup Utility.
Diskette drive B error	
Incorrect Drive A - run SETUP	
Incorrect Drive B - run SETUP	
System Cache Error - Cache disabled	The system cache is abnormal. Power off the server and turn it back on. If the message still appears, check the error log and replace the CPU if it is at fault. Or the baseboard must be replaced. Refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.
System memory exceeds the CPU's caching limit	
EISA CMOS not writable	Power off the server and turn it back on. If the message still appears, the keyboard must be replaced. Refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.
DMA Test Failed	
Software NMI Failed	
Fail-safe Timer NMI Failed	
Verify CPU Frequency selection in Setup	The CPU is abnormal. Power off the server and turn it back on. If the message still appears, check the error log and replace the CPU if it is at fault. If the message still appears, the keyboard must be replaced. Refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.

table: List of POST Errors

Message	Description
System Management Configuration changed	The hardware configuration changed or is invalid. If this is displayed right after changing the hardware configuration, disregard it. If the same message is displayed again, check the cable connections, and then select [Yes] for the [Reset Configuration Data] setting under the [Advanced] menu of the BIOS Setup Utility. If the message still appears, refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.
Invalid System Configuration Data	The system configuration is invalid. Select [Yes] for the [Reset Configuration Data] setting under the [Advanced] menu of the BIOS Setup Utility.
Invalid System Configuration Data - run configuration utility	
The system chassis has been opened.	The hard disk cover or side cover is open. Close the cover.
The system performed an emergency shutdown.	The system shut down due to some reason; refer to the event log for details.
Manually-operated Retention Latch is not closed at Hot-Plug PCI slot n	The baseboard is abnormal. It must be replaced. Refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.
CNR Plug and Play EEPROM contents are damaged.	A CNR error.
CNR version newer than motherboard, some CNR functionality may be lost.	
CNR and AC97 Version do not match, AC97 functionality of CNR ignored.	
Illegal AC97 configuration, AC97 Audio and Modem functions disabled.	
Illegal AC97 configuration, AC97 Modem function disabled.	
CNR LAN Interface not compatible with Motherboard, LAN function disabled.	
USB version required by the CNR is not supported by the motherboard. The CNR USB functions will operate at lower spe	
CNR EEPROM PCI Configuration data size mismatch	
BIOS update for installed CPU failed	Check that the correct CPUs are installed. If the correct CPU is installed and the message is displayed, select [Yes] for the [Reset Configuration Data] setting under the [Advanced] menu of the BIOS Setup Utility. If the message still appears, the CPU or baseboard must be replaced. Refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.
Patch for installed CPU not loaded. Please run the bios flash update diskette.	
CPU ID n failed	CPU ID n is abnormal (where "n" represents the CPU number). Select [Disabled] for the [CPU Status] setting under the [Server] menu of the BIOS Setup Utility. Afterwards, replace the faulty CPU.
Invalid NVRAM media type	The NVRAM is abnormal. Power off the server and turn it back on. If the message still appears, the keyboard must be replaced. Refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.
Missing or invalid NVRAM token	

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table: List of POST Errors

Message	Description
Operating system not found	The OS to start cannot be found. Check to see whether a floppy disk is unnecessarily inserted, whether the cables of each device are connected correctly, or whether the hard disk was successfully accessed during POST. Also, start the BIOS Setup Utility and check the [Boot Sequence] setting of the [Boot Option]. If the message still appears, refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.
Parity Check 1	Power off the server and turn it back on. If the message still appears, the keyboard must be replaced. Refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.
Parity Check 2	
Service Processor not properly installed	
Unknown PCI Error	The PCI is abnormal. Disregard this message if it is displayed when pressing the NMI switch in MS-DOS. Otherwise, refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.

■ Server Management Tools Error Messages

The following error messages may appear while executing Server Management Tools. In such cases, perform the corresponding resolutions. If messages other than the following are displayed, refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.

table: List of Server Management Tools Error Messages

Message	Description
Write protect error writing drive A. Abort, Retry, Fail?	The inserted floppy disk is write-protected. Disable the write-protect, and then press the [R] key.
Not ready writing drive A. Abort, Retry, Fail?	The floppy disk is not inserted into the floppy disk drive. Insert the proper floppy disk ("Server Management Tools" disk), and then press the [R] key.
ERROR:Fail to create data file. ERROR:Fail to write 1st CMOS data into data file. nn ERROR:Fail to write 2nd CMOS data into data file. nn ERROR:Fail to write ESCD data into the data file. nn ERROR:Fail to write SEEPROM data into the data file. nn	The following are possible causes. Check the floppy disk status again. • The floppy disk is write-protected. Disable the write-protect and retry. • The floppy disk is not inserted into the floppy disk drive. Insert the proper floppy disk, and then retry. • The floppy disk contains abnormal contents. Create "Server Management Tools" again. If this occurred while recovering BIOS information, configure the information using the BIOS Setup Utility. Then store the BIOS information.
ERROR:Fail to open data file.	The file for recovering the BIOS information does not exist on this floppy disk. Insert the floppy disk on which the BIOS information was stored, and then retry.
ERROR:Fail to write 1st CMOS data into system. nn ERROR:Fail to write 2nd CMOS data into system file. nn ERROR:Fail to write ESCD data into system file. nn ERROR:Fail to write SEEPROM data into system. nn	The following are possible causes. Check the floppy disk status again. • The floppy disk is not inserted into the floppy disk drive. Insert the proper floppy disk, and then retry. • A different model or an unsupported version of BIOS information. Insert the proper floppy disk, and then retry. • The floppy disk contains abnormal contents. Create "Server Management Tools" again. If this occurred while recovering BIOS information, configure the information using the BIOS Setup Utility. Then store the BIOS information.
Other messages	Refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.

9.2.3 Software Troubleshooting

This section explains software related troubleshooting. For troubles during OS installation or system operation, refer to the following contents.

■ Trouble at a ServerStart Startup

● After a boot from the ServerStart CD-ROM, nothing is displayed on the screen.

This problem may occur if the hard disk drive still contains previous information. In that case, this problem will still occur when the Windows Server 2003 Installation CD-ROM is inserted.
To eliminate this problem, physically format the hard disk drive to delete the previous information and start up ServerStart. For physical formatting, refer to "8.3.6 Formatting Hard Disks Physically" (→Pg.258) or "PRIMERGY ServerBooks" supplied with the server, or "Supplement" supplied with options.

■ Trouble during OS Installation

● Automatic logon is not performed during Windows 2000 setup.

During OS installation, ServerStart installs applications and hardware utilities supplied with the OS. Installation and subsequent restart and logon are performed automatically as necessary. In rare cases, however, automatic logon is not performed and the logon window appears. In this widow, logon the user name and password you have set before starting installation. After logon, the setup procedures are continued.

● Automatic installation stopped at an entry screen during Active Directory configuration.

If automatic installation has stopped during Active Directory configuration, check the error message first. Automatic installation can stop when the password is required, such as when registration in DNS fails. Check the environment and continue the installation manually. If the problem is not solved, click [Cancel] and after the OS installation, manually configure Active Directory.
If you have continued the Active Directory installation wizard manually, the following message appears when the installation wizard closes.

```
It is necessary to restart Windows before making any changes made in
the "Active Directory installation wizard valid."
```

When this message appears, click [Restart] to continue the installation.

■ Error Messages during Installation

The following error messages may appear during installation using ServerStart. Check the corrective action against the relevant error.

● "WzDiskAdmin: System Error! .... , Last Error: Device preparations are not complete. " is displayed

Optional SCSI devices (e.g., hard disk cabinet or DAT unit) may be connected. Disconnect the optional SCSI devices and perform installation again. Connect the optional devices after the installation completes.

● "WzDiskAdmin: Partition detected! Please delete all partition before starting Configuration" is displayed

Run the guided or preconfiguration mode again. Check [Delete all partitions on the displayed disk] in the disk wizard.

● "WzRaid: RAID arrays detected! Please delete all RAID arrays before starting Configuration" is displayed

Use the ServerStart floppy disk you have created. Check [Delete existing RAID array] or select [Use existing array] in the RAID wizard.

● "Operating System not found" appears when the system restarts after file copy from the CD-ROM

The following problems should be considered. Check the settings.

- The array controller card comes later than the onboard SCSI in order of device startup.
- The Active flag is specified.

● "Missing Operating System" appears during installation

The installation partition size may be too large. Specify the installation partition size correctly.
For details on the installation partition size, refer to "2.3.1 Installation Partition Size" (→Pg.49).

● "Error 1920. Service (PXE Services) failed to start" appears during preconfigured installation

The system installed with the preconfigured settings (PXE server) may not be connected to the network. Check the LAN cable connection and click [Rerun].

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■ Error Window Appears after LAN Driver Installation (on Windows Server 2003)

The following window may appear when the installation of the LAN driver to the [Ethernet controller] under [Other devices] starts.
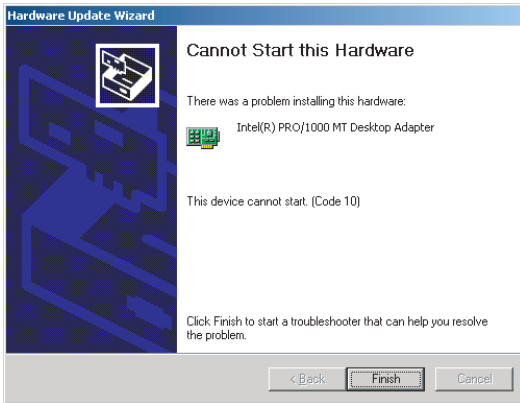
This is because the LAN driver for the network adapter recognized immediately after the OS installation is not updated.

Clicking [Finish] in this window displays the [Help and Support Center] window. Click [X] to close this window.

The "!" mark is displayed at the LAN device name in Device Manager. Device names are displayed properly when all LAN drivers are installed and the system is restarted.

For details on LAN driver installation, refer to "4.3.1 Installing the LAN Driver (Windows Server 2003)" (→Pg.127).

■ Error Message Appears during LAN Driver Installation and LAN does not Operate Properly

A conflict may have occurred between system resources including the LAN and other expansion cards. Delete all LAN drivers and check that conflicts between system resources do not exist. Then, restart the system and reinstall the LAN drivers. For the LAN driver installation procedure, refer to "4.3 Installing the LAN Driver" (→Pg.127).

■ Event Log Errors after Installation

After installation, the following events may be displayed in Event Viewer. Check and perform the corrective action against the relevant event.

table: List of Event Log Errors That Can Occur after Installation

ID	Description	Cause and corrective action

62	This computer is a domain PDC at the root of forest.
	 Use the net command "net time / setsntp:<server name>" to configure it for synchronization from an external time source.
		Cause:
		An NTP was selected as a component.
		 Corrective action:
		ServerStart cannot configure the NTP server due to the absence of items for specifying it. After OS installation, perform the following procedure to specify the time server.
		  1. Start SNTP server operation on another machine. Assume that the SNTP server address is <172.22.78.246>.
		  2. Enter the following at a command prompt.
		    net time /setsntp:172.22.78.246
		    w32tm -s 172.22.78.246

1000	The user or computer name cannot be identified. The return value is "1722".	Cause:
		The primary DNS server address may be invalid or the server cannot be connected.
		 Corrective action:
		Perform the following procedure to correct the DNS address in Internet protocol (TCP/IP) properties.
		  1. Right-click [My Network] and click [Properties].
		  2. Right-click [Local Area Connection] and click [Properties].
		  3. Click [Internet Protocol (TCP/IP)] and click [Properties].
		  4. Enter the correct DNS address in the [Primary DNS server] box.

■ Cannot Collect the Memory Dump

If the memory dump file cannot be created, perform the following procedures.

● Correcting the settings

If the memory dump cannot be collected, check the settings of the paging file and memory dump file. For setting procedures, refer to "5.1 Memory Dump/Paging File Setting" (→Pg.134).

● Collecting memory dump to other than the system drive

If the memory dump was set to be collected to the system drive (C:\), change the settings so that the memory dump can be saved to a drive other than the system drive.
For setting procedures, refer to "5.1 Memory Dump/Paging File Setting" (→Pg.134).
If only the system drive exists, or if there is no free space in any of the drives, perform one of the following:

- Adding a hard disk
- Replacing with a larger hard disk

● **Reducing the installed memory to collect the memory dump**

There must be enough free disk space that matches the size of the installed memory; therefore, reduce the installed memory to a collectable size.
Check the memory dump settings when changing the installed memory size.
For setting procedures, refer to "5.1 Memory Dump/Paging File Setting" (→Pg.134).

● **Changing the write type of the debugging information**

If the memory dump cannot be collected, select a write type of debugging information within the range of free space of the volume size.
If the above does not provide a solution, try increasing the size of the hard disk or adding an additional hard disk.

■ Restoring the System

In the event where the system file, system configuration, or environment changes during startup are corrupted, use the repair information stored on the repair disk created at the installation to restore the system.
 For restoration procedures, refer to the following:
- "9.6.1 For Windows Server 2003" (→Pg.291)
- "9.6.2 For a Windows 2000 Server" (→Pg.292)

■ Failed in Remote Installation

If remote installation fails, check the following.

● **Checking Services**

Check that the DHCP, PXE Service, and TFTP Service are running.
For checking procedures, refer to "3.4 Remote Installation" (→Pg.90).

● **Setting TFTP**

To access TFTP Service, add a Guest account to the TFTP folder and set appropriate access rights.
For setting procedures, refer to "3.4 Remote Installation" (→Pg.90).

● **Checking Network Function Settings**

The server must support network startup (PXE). Network startup must be enabled in advance.
For setting procedures, refer to "2.1.2 Hardware Settings" (→Pg.46).

● **Checking the MAC Address**

Check that the current MAC address is the correct MAC address of the server.
For the MAC address checking procedure, refer to "2.1.2 Hardware Settings" (→Pg.46).

● **Checking LAN Cable Connection**

Check that the LAN cable is connected to the LAN card corresponding to the specified MAC address and that the LAN card is connected to the network.

■ SNMP Service does not Startup

Regardless of whether the Simple Network Management Protocol (SNMP) is installed, if the SNMP service is not started, perform the following procedure to start the SNMP service:

1 Click [Start] → [Management tools] → [Computer Management] in this order.

2 Select [Services] from the [Services and Applications] menu.

3 From the details, select [SNMP Service].

4 Select [Start] from the [Action] menu.

✎POINT

▸ To have the service automatically start each time the OS starts, double-click [SNMP Service] from the details, and select [Automatic] for the [Startup type] setting of the [SNMP Service Properties] window.

■ Time Display in Linux OS Environment

● Difference in Time between the OS and the Hardware Clock

During OS operation in a Linux environment, the software clock on the OS, rather than the hardware clock in the server, is used to display the time.
This may cause a difference in time between the OS and the hardware clock.
When you want to see the accurate time on the OS, it is recommended to use the NTP service to periodically correct the time displayed on the OS.

● Changing the Time Settings for the OS and Hardware Clock

In a Linux environment, the time displayed on the OS (the software clock value on the OS) is written to the hardware clock in the server when the OS is shut down.

• Procedure for prohibiting the time on the OS from being written to the hardware clock
When you do not want the time on the OS to be written to the hardware clock at an OS shutdown, comment the following line out in /etc/rc0.d/S01halt.

runcmd $"Syncing hardware clock to system time" /sbin/hwclock $CLOCKFLAGS
↓
#runcmd $"Syncing hardware clock to system time" /sbin/hwclock $CLOCKFLAGS

• Procedure for reflecting the hardware clock value to the time on the OS
To reflect the hardware clock value to the software clock value on the OS, run the following command.

>hwclock --hctosys

9.3 System Event Log

To operate system event log, use Server Management Tools.

9.3.1 How to Use Server Management Tools

This section explains how to use Server Management Tools.
Server Management Tools performs the following to the system event log of the Baseboard Management Controller (BMC: a micro-controller used for managing the baseboard environment, such as its temperature and voltage sensors).

- Viewing the system event log
- Saving the system event log
- Deleting the system event log

When a system event log occurs, save the log using Server Management Tools and refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.

■ Starting Server Management Tools

1 Insert the "Server Management Tools" disk supplied with this server and turn the power on.

The system will boot from the floppy disk and the DOS prompt is displayed.

2 Enter the following command and press the [Enter] key.

A:\SMTOOL\>IPMIVIEW.EXE

The menu window of Server Management Tools appears.

```
FUJITSU
 SIEMENS           IPMI-Tool - Vn.nn
  COMPUTERS

     General Information
     Temperature Information
     Fan Information
     Voltage Information
     Powersupply Information
     System Event Log (SEL)
     FRU Information (ID Proms)
     User Management
     LAN Configuration
     FSC/System Specific Functions




 <↑ ↓> Select    <ENTER> Start    <ESC> Exit
```

IMPORTANT

▶ Only the following functions are supported by Server Management Tools:
  • System Event Log (SEL)
  • User Management
  • LAN Configuration

■ Exiting Server Management Tools

1 Press the [Esc] key in the menu window of Server Management Tools.

The power can be turned off when the DOS prompt is displayed.

9.3.2 Viewing the System Event Log

Viewing the system event log is performed from System Event Log (SEL) of Server Management Tools.

1 Start Server Management Tools.
The menu window of Server Management Tools appears.

2 Use the [↑] and [↓] keys to select [System Event Log (SEL)], and press the
[Enter] key.
When the [SYSTEM EVENT LOG (SEL)] window is displayed, check the event log list.

```
FUJITSU
 SIEMENS                    SYSTEM EVENT LOG (SEL)
  COMPUTERS

004 MMM-DD-YYYY HH:MM:SS [*****] ****************************************
003 MMM-DD-YYYY HH:MM:SS [*****] ****************************************
002 MMM-DD-YYYY HH:MM:SS [*****] ****************************************
001 MMM-DD-YYYY HH:MM:SS [*****] ****************************************
000 MMM-DD-YYYY HH:MM:SS [*****] ****************************************




<↕↔,PgUp/Dn,(Ctrl-)Home/End> Move  <F2> SaveToFile  <F3> Clear  <ESC> Exit
```
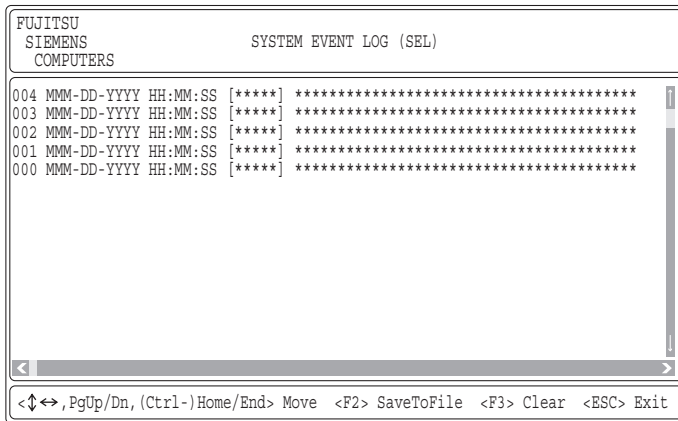
3 Use the following key operations to scroll the window and check the contents.
[↓], [↑], [←], [→], [Page Up], [Page Down], [Ctrl] + [Home], [Ctrl] + [End]

4 To exit the system event log, press the [Esc] key.

9.3.3 Saving/Deleting the System Event Log

When the system event log is full, the oldest log is overwritten with the newest log. Periodically check
the system event log and save/delete as necessary.

■ Saving the System Event Log

1 Start Server Management Tools.
The menu window of Server Management Tools appears.

2 Use the [↑] and [↓] keys to select [System Event Log (SEL)], and press the
[Enter] key.
The [SYSTEM EVENT LOG (SEL)] window appears.

3 Press the [F2] key.

4 Enter the name of the file to save the system event log to, and press the [Enter] key.

The system event log is saved to the floppy disk under the specified file name.

■ Deleting the System Event Log

1 Start Server Management Tools.

The menu window of Server Management Tools appears.

2 Use the [↑] and [↓] keys to select [System Event Log (SEL)], and press the [Enter] key.

The [SYSTEM EVENT LOG (SEL)] window appears.

3 Press the [F3] key.

A confirm delete window appears.

4 Press the [Enter] key.

This deletes the system event log.

POINT

▸ Selecting [System Event Log (SEL)] right after deleting the system event log will result in an error. Allow approximately 10 seconds to select it normally.

9.4 Security

Security features are provided in order to protect the server hardware and software from theft. Additional security functions, which prevent unauthorized use, provided by the BIOS Setup Utility are also available to help maintain a highly reliable data security system.

9.4.1 Hardware Security

Lock the drive and side covers to protect the hardware (hard disks and 5-inch internal devices) in the server from theft or tampering.
Keep the side cover locked during normal use.
Turn the key clockwise to lock the cover.

[Front]   [Rear]

Drive cover key
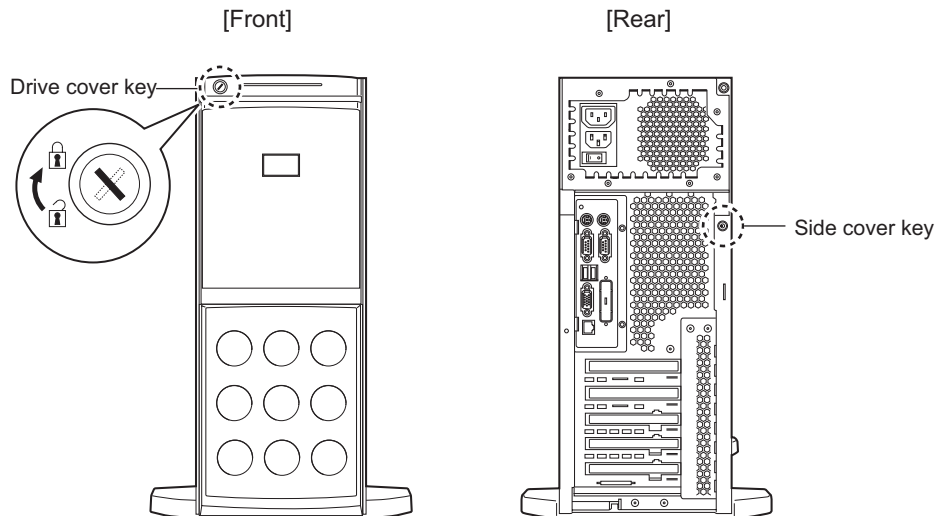
Side cover key

POINT

▶ Do not lose the drive cover and side cover keys. If the key is lost, refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.
▶ For instructions on opening the drive cover, refer to "1.4.1 Sliding the Drive Cover" (→Pg.31).
▶ For instructions on opening the side cover, refer to "7.2 Removing and Attaching Covers" (→Pg.176).

■ Rack Type

Lock the rack door to protect the hardware in the rack from theft or tampering.
To close the rack door, shut the door and return the rack handle, and turn the rack key.
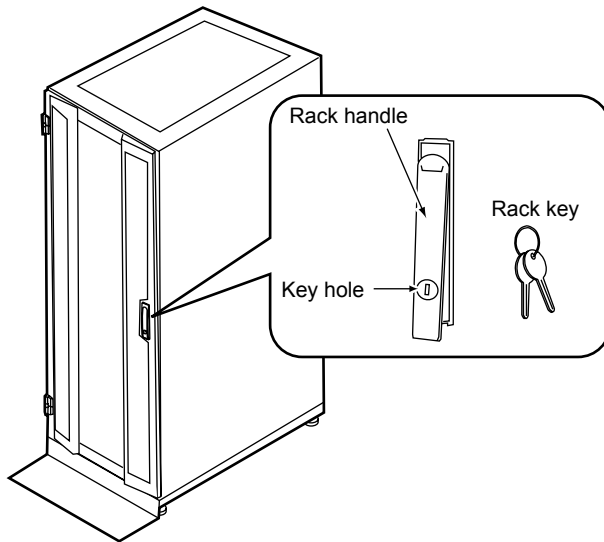
P POINT

▶ Do not lose the rack key. If the key is lost, refer to "Contact Information" in "Start Guide", and contact your maintenance engineer.
▶ For instructions on opening the rack door, refer to "1.4.2 Opening the Rack Door" (→Pg.32).
▶ The above explanation is based on the 40U standard rack. For details on other rack systems, refer to their respective manuals.

9.4.2 Security against Unauthorized Use

A password can be set to prevent unauthorized use of the server.
Setting a password makes it necessary to enter the password in order to access the server. Without the password, the server cannot be used.

■ Password Types

There are two types of passwords that define the privileges of server operations.

● User Password

The password required to use the server. Unless the set password is entered, part of the BIOS setup cannot be accessed and the OS cannot be booted.

● Administrator Password

This is the password that only allows the administrator to access the BIOS setup. Unless the set password is entered, the BIOS setup cannot be accessed and the OS cannot be booted.

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■ Setting a Password

The password is set in the BIOS Setup Utility. For details on the BIOS Setup Utility, refer to "8.2.11 Security Menu" (→Pg.245).

1 Start the BIOS Setup Utility.

→"8.2.1 Starting and Exiting the BIOS Setup Utility" (Pg.231)

2 Select the [Security] menu and select the type of password to set.

- For the administrator password, move the cursor to [Set Setup Password] and press the [Enter] key.
- For the user password, move the cursor to [Set System Password] and press the [Enter] key.

3 When the password input window is displayed, enter the password to set.

```
Set Setup(System) Password:

    Enter New Password    [       ]        Enter the password
  Confirm New Password    [       ]        Enter the password again for confirmation
```
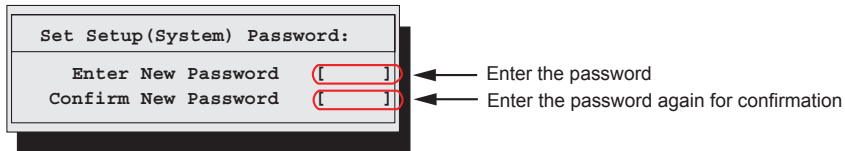
4 Press the [Enter] key.

This sets the password.

● Changing/Deleting Passwords

If a password is already set, perform the above password setting operations to display the password change window.

- To change the password, perform the following settings and press the [Enter] key.

```
Set Setup(System) Password:

Enter Current Password    [       ]        Enter the current password
    Enter New Password    [       ]        Enter the new password
  Confirm New Password    [       ]        Enter the new password again for confirmation
```
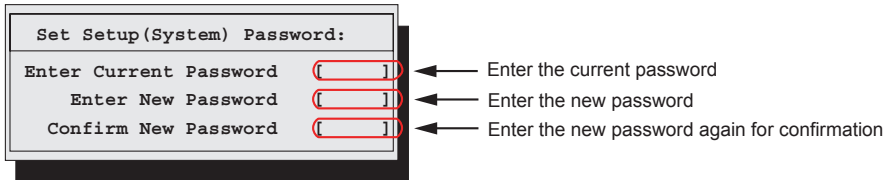
- To delete the password, enter the current password, and then press the [Enter] key without entering anything in the second and third fields. The status of [Setup (System) Password] changes to [Not installed].

♀POINT

▸ The system shuts down after three invalid password entries. If this happens, turn off the server, turn it back on, and then enter the correct password.
▸ If you forgot your password and cannot start the server, change the switch block setting on the baseboard to reset the passwords. For switch block settings, refer to "8.1 Switch Settings" (→Pg.230).

9.4.3 Security When Disposing the Server

■ Notes regarding the Deletion of Data from the Hard Disk When Disposing or Transferring the Server

When disposing or transferring a server that has been used, the data in the hard disk may be read and used unscrupulously. To prevent confidential or important data from leaking out, the data on the hard disk must be wiped before disposing or transferring the server.

However, wiping the hard disk is not an easy task. Simply initializing (formatting) the hard disk or deleting the files may give the pretense that the data no longer exists, but in reality the data is simply no longer accessible to the OS, and it is still accessible to malicious individuals that can restore the data. Therefore, if confidential or important data is saved to the hard disk, in addition to the operations mentioned above, it is recommended to use third-party tools or services to wipe the data completely from the disk to prevent its restoration.

When disposing or transferring the server, it is the customer's responsibility to wipe data contained in the hard disk in order to prevent such important data from leaking.

Also, if software license agreements prohibit unauthorized distribution of software (OS or application software), transferring the server without removing the software may violate the license agreements. These issues must be taken into consideration.

9.5 Backup

This server utilizes high-reliability components and hard disks, however, as a precautionary measure, it is recommended that periodic backups be taken of the data.

9.5.1 Importance of Backups

A backup of data stored on the server is required for data restoration in the event of server trouble resulting in a system failure or accidental data loss due to operational errors. If the data on the server is backed up, it can be restored from the backup in the event of hardware failures or data corruption in hard disks due to operational errors. If backups are not made, restoration is impossible and data will be permanently lost. To prepare for unexpected problems, be sure to perform periodic backups of the system.

9.5.2 Backup Devices, Software and Their Operations

Backup operations differ depending on network operating systems, applications, and system operations. Refer to "Contact Information" in "Start Guide", and contact your sales representative and make backups using the following items.

- Backup device (e.g., DAT72 unit)
- Backup software
  (Standard backup software supplied with the OS, e.g., ARCserve, Changer Option)
- Backup operations (schedules)
  Use our genuine backup devices and software. Observe the backup medium (tape) storage conditions.

POINT

▸ Mirroring/disk array systems
  To improve system reliability, a mirroring or disk array system using a RAID controller card, in addition to periodic backup creation, is recommended.

■ Notes on Operating Backups

Take the following notes when operating backups.
For details, refer to "PRIMERGY ServerBooks" supplied with the server, and "Supplement" supplied with options.

● Head Cleaning

Airborne dust and dust from the magnetic media can collect on the head of the magnetic tape device. To remove this dust, head cleaning must be implemented. Implement head cleaning when the device displays a cleaning request. Particularly DDS devices require periodic head cleaning, otherwise dust can cling to the magnetic head, creating a situation that cannot be cleaned with standard head cleaning methods, and eventually render the device useless.

Also note that the cleaning media has a limit on how many times it can be used. Using cleaning media that exceeded its lifespan will have no cleaning effect. Note these points especially when performing automatic backups with library devices.

● Managing Media Lifespans

Media is a consumable product that must be replaced regularly.

Continued use of media exceeding its lifespan can have negative effects on the device (e.g. increase the speed of dust accumulation). The lifespan of media varies depending on the environment and operation condition of the device, the type of backup software used, and other operation conditions, however, it is recommended that they be replaced sooner than later.

To manage the lifespan, write the use start date on the media.

● Rotating Media

When using a single media cartridge over and over, backup data can be temporarily lost in the event the backup fails. Also if the hard disk fails during backup, the backup data cannot be recovered.

Perform backup operations using multiple mediums on a rotating basis.

● Avoid Leaving Media in Devices

Because the magnetic recording surface of the device is exposed, media can easily affected by airborne dust when left inserted for a long period of time. Insert the media before using it, and remove the media after use, and restore it in its case.

Also note that some tape devices write management information to the tape when ejecting the media. If the power were to go out when the media is still in the device, this writing process will not be performed and the media may become corrupted.

To avoid this, remove the media from the device when turning off the server/device.

● Verifying Data after a Backup

Some backup software products provide data verification functions after a backup is completed. Such functions will read and verify the data written to the media after a backup is completed. This will increase the usage of the media, thus reducing the number of times it can be used for backups. Depending on the hardware being used, some devices perform "read after write" operations on data; note the points of this section as necessary.

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● **Ejecting Media after a Backup**

Some backup software products provide functions for ejecting media after a backup is completed. Such functions will rewind the tape after a backup is completed and then eject the media from the drive. Be sure to execute this function for autoloader/library devices. Depending on the structure of some servers, this function may cause the media to eject from an internal device of the server and hit the chassis door. If this is the case, open the door when ejecting, or do not eject the media.

● **Media Label Types and Positions**

When writing information such as the name on media, use the label that came with the media. The area in which a label can be posted on the media of each device varies. Failing to post labels in the designated area can damage the device.

● **Data Storage**

When storing data for long periods of time, store the media in a location least affected by humidity and magnetic fields.

9.6 Restoring the System

In the unfortunate event where the system file, system configuration, or environment changes during startup are corrupted, use the repair information stored on the recovery disk created at the installation to restore the system.

POINT

▶ Create a recovery disk when you have installed an OS or changed the system configuration. Refer to "5.2 Creating a Disk for System Recovery" (→Pg.143).

9.6.1 For Windows Server 2003

● Items Required

- Windows Server 2003 CD-ROM
- Automated System Recovery (ASR) floppy disk (created beforehand)
- Backup media (created beforehand)
- Driver disk (for RAID cards or onboard SCSI)
  For details about how to create a drive disk, refer to "4.1 Creating Driver Disks" (→Pg.114).
- Windows Server 2003 First Step Guide

  1 Follow "Windows Server 2003 First Step Guide" to start Windows Server 2003 setup.

  2 When a message prompting you to press the [F6] key appears immediately after the start of setup, press the [F6] key.

  3 When a message prompting you to press the [F2] key appears, press the [F2] key.
  A message prompting you to insert the ASR floppy disk appears.

  4 Insert the ASR floppy disk and follow the window instructions.

  5 The system restarts and a message appears. Press the [F6] key.

  6 Follow the window instructions to restore the system.

POINT

Notes on Automated System Recovery
▶ Automated System Recovery does not restore data files.

9.6.2 For a Windows 2000 Server

● Items Required

- Windows 2000 Server CD-ROM
- Windows 2000 Server system recovery disk (created beforehand)
- Windows 2000 Server First Step Guide

1 Follow "Windows 2000 Server First Step Guide" to start Windows 2000 Server setup.

2 From the [Welcome to Setup] window of the Windows 2000 Server Setup program, press the [R] key to select restoration.

3 Follow the message on the setup window to restore the system.

₽POINT

Notes on system restoration
- ▶ The system may return to the initial installation conditions depending on the restoration information used. In this case, the system must be configured after system restoration.
- ▶ Windows 2000 Server may have to be reinstalled if system files or system information are severely damaged. If this is the case, reinstall it. Refer to "9.7 Reinstalling the OS" (→Pg.293).
- ▶ The message "The file ******.*** is not the original file copied when Windows 2000 was installed." appears during file restoration. Press the [Enter] or [A] key to restore the file.

9.7 Reinstalling the OS

This section explains the procedure for reinstalling the OS.

9.7.1 Checking before OS Reinstallation

■ Removing the Optional Devices

Remove the following optional devices before reinstalling the OS. Install or connect them after OS installation.

- Optional SCSI devices (e.g., hard disk cabinet or DAT unit) connected via a SCSI card
- Internal hard disk units that do not contain the OS installation folder
- 5-inch internal devices
- USB devices

■ Deletion of Data from the Disc

Reinstalling a disk will delete all the contents of that disk. Please be careful. Save the necessary data and system configuration in a different location.
Some drivers and software are not installed together with the OS. Install them after OS installation.

■ Other Notes

Other notes are the same as those that apply for first time installation. Please check in advance.

9.7.2 Reinstallation Using ServerStart

When the previous installation was performed in guide or preconfiguration mode, the ServerStart floppy disk used in that installation can be used again. When the reinstallation is performed with the same configuration as that for the previous installation, you do not have to edit the configuration file on the ServerStart floppy disk. You do not have to configure setting on wizards. After ServerStart starts up, click [Start (OS) Installation] to perform installation.
Use the expert mode when you want to perform reinstallation while maintaining the existing partitions.

9.8 Changing OS Settings

This section explains the procedure for changing OS settings.

When you have changed to enable Hyper-Threading using the BIOS setting after starting operation in a one CPU configuration or when you add a CPU, change the OS to the multi-processor kernel.

When you will reduce the number of CPUs from two to one or disable Hyper-Threading, change the OS to the uni-processor kernel.

POINT

▶ For the use of Linux, refer to the Fujitsu PRIMERGY website (http://primergy.fujitsu.com).
▶ Hyper-Threading is enabled at the time of purchase. For functions and settings of Hyper-Threading, refer to "8.2.8 Advanced System Configuration Submenu" (→Pg.241).

9.8.1 For Windows Server 2003

After adding a CPU or changing the Hyper-Threading setting, starting up the OS changes OS settings. A pop-up message appears. Follow the window instructions.

9.8.2 For a Windows 2000 Server

Change OS settings in the following procedure, then add a CPU or change the Hyper-Threading setting.

1 Startup Windows 2000 Server.

2 Start up Device Manager.
   1. Click [Start] → [Settings] → [Control Panel].
   2. Double-click the [System] icon.
   3. Select the [Hardware] tab and click [Device Manager (D)...].

3 Display computer properties.
   1. Select [Devices (by type)] from the [View] menu.
   2. Select [Computer] in the tree view and click [+] to expand it.
   3. Double-click the following item.
      • [ACPI uni-processor] to change the OS to the multi-processor kernel
      • [ACPI multi-processor] to change the OS to the uni-processor kernel

4 Click the [Driver] tab and click [Update Driver (P)...].
   The device driver upgrade wizard starts up.

5 Click [Next].

6 In search method selection, select [Display known drivers for this device and select a driver from the list.] and click [Next].

The [Select Device Driver] window appears.
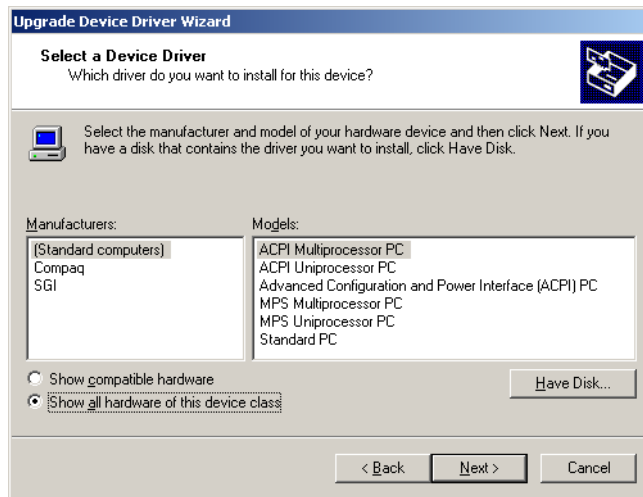
7 Select [Show all hardware of this device class]. From the [Manufacturers] list, select [(Standard computer)]. Select the following from [Model].

- [ACPI Multiprocessor PC] to change the OS to the multi-processor kernel
- [ACPI Uniprocessor PC] to change the OS to the uni-processor kernel

IMPORTANT

▶ If you select an incorrect "model" operations will not be performed normally. Because reinstallation is also sometimes necessary, check that you have selected the correct model.

8 Click [Next].

The [Start Device Driver Installation] window appears.

9 Click [Next].

Driver update starts. The [Finish] window appears when it completes.

10 Click [Finish].

The property screen for the ACPI multi-processor PC or ACPI uni-processor PC appears.

11 Click [Close].

The [Change System Settings] window appears.
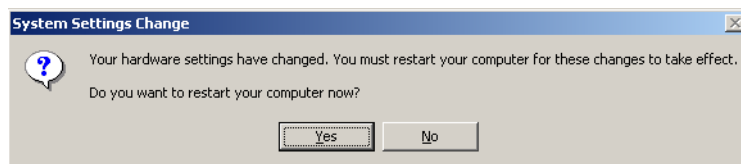
12 Click [Yes].

The computer shuts down and restarts automatically.

13 Add an optional CPU or change the Hyper-Threading setting in the BIOS Setup Utility.

→"7.3 Installing a CPU" (Pg.181)

→"8.2.1 Starting and Exiting the BIOS Setup Utility" (Pg.231)

→"8.2.8 Advanced System Configuration Submenu" (Pg.241)

14 Restart the system.

When the OS starts up, check that the item under [Computer] is changed in Device Manager of Control Panel.

9.9 Maintenance Service

This section explains the details of the maintenance service.
If the cause of the failure is uncertain or if the original condition cannot be restored, contact the seller or your maintenance engineer.

9.9.1 Maintenance Service

■ Maintenance Support Period

The maintenance support period is for five years after the purchase of the server.

■ Non-durable Components

Depending on the environment and period of usage there will be non-durable components that require replacement within the warranty period.

Customers who have signed up to hardware maintenance contract will be provided with replacement parts free of charge and will have higher priority for replacement. Customers not signed up to hardware maintenance contract will be charged for operation cost (including the maintenance parts) separately.

POINT

Replacing non-durable components

▶ To ensure stable operation of the server system, it is recommended that a maintenance service agreement be purchased.

▶ Replacement Period for Non-durable Parts

The lifetime of such components is calculated based on appropriate usage environments.

Although the guaranteed range for operation is set between 10 and 35 °C, the lifetime is assumed at a constant average temperature of 25 degrees.

▶ Types of non-durable components

table: Non-durable Component List

Component	Description
RAID Ctrl 2-Channel 128MB w/ BBU (PG-142E3) battery	Regardless of the time the power was turned on and off, the lifetime is 3 years.

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9.9.2 Contacting Maintenance Support

Before contacting maintenance support, check the following. For the maintenance support, refer to "Contact Information" in "Start Guide".

● Item

- Model name and product ID of the server
  They are described on the label on the server. For the label location, refer to "Start Guide".
- Hardware configuration (Types and locations of internal options)
- Configuration information (BIOS Setup Utility, SCSI Setup Utility settings)
- OS
- LAN/WAN system configuration
- Phenomena (what happened when doing what, what was displayed, etc.) and date/time of occurrence
- Environmental settings of the server
- LED statuses

POINT

▸ Print and fill in the Configuration Sheet and the Accident Sheet of the "Configuration Sheets".

Appendix

This appendix explains the specifications for the server and for its hardware options.

A   Server Specifications

This section explains the specifications for the server.

A.1   Diskless Type

table: Server Specifications - Diskless Type

Item		Functions and Specifications			
Product ID		PGQT2027A	PGQT2025A	PGQT2023A	PGUT2023A
CPU modules	Standard	64-bit Intel® Xeon™ Processor 3.60E GHz/ 2MB	64-bit Intel® Xeon™ Processor 3.20E GHz/ 2MB	64-bit Intel® Xeon™ Processor 3.0E GHz/2MB	
	With the conversion kit	–	–	–	64-bit Intel® Xeon™ processor 3.20EHz/2MB 64-bit Intel® Xeon™ processor 3.60EGHz/2MB
	Number of multiplication	2			
Memory	Standard	512MB (256MB DDRI 333 SDRAM-DIMM × 2)			
	Adding size	512MB / 1GB / 2GB (DIMM × 2)			
	Maximum	6GB (when 1GB DIMM is used)			
Graphics		VGA chip: ATI Rage XL 640 × 480, 800 × 600, 1024 × 768, 1280 × 1024 Displayed colors: Differ depending on resolution and OS			
5-inch storage bay		3 bays (including the standard bay) Types: CD-ROM, DAT72, VXA2, LTO, hard disk unit bay conversion kit			
	Installed as standard	24× slim EIDE CD-ROM drive			
3.5-inch storage bay		6 bays (9 bays when the internal hard disk unit bay conversion kit is used)			
	Standard	–			
	Adding size	73.4GB / 146.8GB / 300GB (10,000rpm Ultra320 SCSI SCA) 73.4GB (15,000rpm Ultra320 SCSI SCA)			
	Maximum	2700GB (300GB × 9)			
Disk array		–			
Expansion slots		PCI slots x 5 (64bit/133MHz × 2 / 64bit/100MHz × 2 / 32bit33MHz × 1)			
Standard PCI card		–			
Floppy disk drive		3.5-inch (2 mode 1.44MB/720KB) (Standard)			
Interface		LAN (1Gbit Ethernet) × 1 (Standard), Serial × 2, Parallel × 1 (optional), keyboard, mouse, monitor, USB × 3			
Keyboard and Mouse		option			
Dimension (Width × Depth × Height (mm))		286 × 753 × 474 (When the Rack Conversion kit for TX200 S2 is used: 483 (incl. protruding parts) × 750 (incl. protruding parts) × 177 (4U))			
Weight		40kg			
Internal clock precision		± 2–3 minutes/month			
Power consumption		Max. 550W (Max. 1980kJ/h)			
Power		100VAC (50/60Hz) / bipolar ground type			
Power supply unit		Standard: 1, Max.: 2			
Fan		Standard: 2, Max.: 4			
OS		Windows Server 2003 Standard Edition/Windows Server 2003 Enterprise Edition, Windows 2000 Server/Windows 2000 Advanced Server, Red Hat Enterprise Linux AS (v. 3 for x86)/Red Hat Enterprise Linux ES (v. 3 for x86)			

The specifications for this server are liable to be updated without any notice. Please be forewarned.

A.2 SCSI Type

table: Server Specifications - SCSI Type

Item		Functions and Specifications
Product ID		PGQT2023G
CPU modules	Standard	64-bit Intel® Xeon™ Processor 3.0E GHz/2MB
	With the conversion kit	–
	Number of multiplication	2
Memory	Standard	512MB (256MB DDRI 333 SDRAM-DIMM × 2)
	Adding size	512MB / 1GB / 2GB (DIMM × 2)
	Maximum	6GB (when 1GB DIMM is used)
Graphics		VGA chip: ATI Rage XL 640 × 480, 800 × 600, 1024 × 768, 1280 × 1024 Displayed colors: Differ depending on resolution and OS
5-inch storage bay		3 bays (including the standard bay) Types: CD-ROM, DAT72, VXA2, LTO, hard disk unit bay conversion kit
	Installed as standard	24× slim EIDE CD-ROM drive
3.5-inch storage bay		6 bays (9 bays when the internal hard disk unit bay conversion kit is used)
	Standard	73.4GB (10,000rpm Ultra320 SCSI SCA) × 1
	Adding size	73.4GB / 146.8GB / 300GB (10,000rpm Ultra320 SCSI SCA) 73.4GB (15,000rpm Ultra320 SCSI SCA)
	Maximum	2700GB (300GB × 9)
Disk array		–
Expansion slots		PCI slots x 5 (64bit/133MHz × 2 / 64bit/100MHz × 2 / 32bit33MHz × 1)
Standard PCI card		–
Floppy disk drive		3.5-inch (2 mode 1.44MB/720KB) (Standard)
Interface		LAN (1Gbit Ethernet) × 1 (Standard), Serial × 2, Parallel × 1 (optional), keyboard, mouse, monitor, USB × 3
Keyboard and Mouse		option
Dimension (Width × Depth × Height (mm))		286 × 753 × 474 (When the Rack Conversion kit for TX200 S2 is used: 483 (incl. protruding parts) × 750 (incl. protruding parts) × 177 (4U))
Weight		40kg
Internal clock precision		± 2–3 minutes/month
Power consumption		Max. 550W (Max. 1980kJ/h)
Power		100VAC (50/60Hz) / bipolar ground type
Power supply unit		Standard: 1, Max.: 2
Fan		Standard: 2, Max.: 4
OS		Windows Server 2003 Standard Edition/Windows Server 2003 Enterprise Edition, Windows 2000 Server/Windows 2000 Advanced Server, Red Hat Enterprise Linux AS (v. 3 for x86)/Red Hat Enterprise Linux ES (v. 3 for x86)

The specifications for this server are liable to be updated without any notice. Please be forewarned.

B   Specifications for Hardware Options

This section explains the specifications for hardware options for the server. When you have bought a hardware option as a standard option, check that the package contains the following items before use. Should it happen that items are missing, refer to "Contact Information" in "Start Guide", and contact your sales representative or maintenance engineer.

B.1   CPU

■ Package

- CPU (1)
- Heat sink (1)
- CPU fan (1)
- "Cautions for Handling" (1)

■ Specifications

table: CPU Specifications

Model	PG-FG232	PG-FG233	PG-FG234
Clock frequency	3E GHz	3.20E GHz	3.60E GHz
Internal secondary cache size	2MB		

B.2   Memory

■ Package

- RAM modules (2)

■ Specifications

table: Memory Specifications

Model	PG-RM51AE	PG-RM1AE	PG-RM2AE
Capacity	512MB	1GB	2GB
Clock frequency	333MHz (Dual edge)		
PIN count	184PIN		

B.3 Internal Hard Disk Units

■ Package

- Hard disk unit (1)

■ Specifications

table: Internal Hard Disk Unit Specifications

Model	PG-HDH71K	PG-HDH41K	PG-HDH31K	PG-HDH75K
Interface	Ultra320 SCSI			
Storage media	3.5-inch hard disk			
Memory capacity [*1]	73.4GB	146.8GB	300GB	73.4GB
Maximum data transfer speed	320MB/s (Ultra320 Wide)			
Average latency speed	2.99ms		3.00ms	2.00ms
Rpm	10,000rpm			15,000rpm
Dimension	$101.6 \times 146.0 \times 25.4$ (mm)			
Weight [*2]	0.75kg		0.73kg	0.8kg

*1:The value indicates memory capacity of the formatted hard disk (1GB = 1000^3 bytes).
*2:A Hot plug carrier is not included.

B.4 Internal Hard Disk Unit Bay Conversion Kit

■ Package

- Internal hard disk unit bay conversion kit (1)
- SCSI cable (1)
- "Cautions for Handling" (1)

■ Specifications

table: Internal Hard Disk Unit Bay Conversion Kit Specifications

Model	PG-BC102
Number of installable internal hard disk units	3 units
Dimension ($W \times D \times H$)	$149 \times 191 \times 86$ (mm)
Weight	1.1kg

B.5   Power Cord Selection

The power cord for this unit has been packed separately and has been selected according to the country of destination. It must be used to prevent electric shock. Use the following guidelines if it is necessary to replace the original cord set.

The female receptacle of the cord set must meet CEE-22 requirements (see Figure).
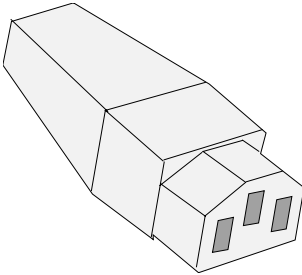
■ For the United States and Canada

Use a UL listed and CSA labeled cord set consisting of a three conductor cord with a maximum length of 15 feet.

For units which stand on a desk or table, type SVT or SJT cord sets should be used.

For units which stand on the floor, only SJT type cord sets should be used.

The cord set must be selected according to the current rating for your unit.

Please consult the table below for the selection criteria for power cords used in the United States and Canada.

table: Selection Criteria for Power Cords Used in the United States and Canada

Cord Type	Size of Conductors in Cord	Maximum Current Rating of Unit
SJT	18 AWG 16 AWG 14 AWG	10 Amps 12 Amps 12 Amps
SVT	18 AWG 17 AWG	10 Amps 12 Amps
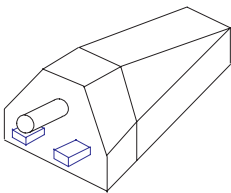
- Parallel
  For units set at 115 V:
  use a parallel blade, grounding type
  attachment plug rated 15 A, 125 V.
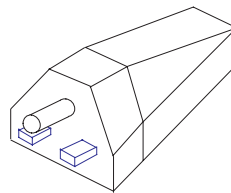
- Tandem
  For units set at 230 V:
  use a tandem blade, grounding type
  attachment plug rated 15 A, 250 V.

A

● **For units set at 230 V (outside of the United States and Canada):**

Use a cord set consisting of a minimum AWG according to the table above and a grounding type attachment plug rated 15 A, 250 V. The cord set should have the appropriate safety approvals for the country in which the equipment will be installed and should be marked HAR.

■ For the United Kingdom

Should the plug on the flexible cord not be of the type for your socket outlets, do not use an adapter but remove the plug from the cord and discard. Carefully prepare the end of the supply cord and fit a suitable plug.

⚠CAUTION ⚠   • This appliance must be earthed.

🔎**POINT**

▶ The wires in this mains lead are colored in accordance with the following code:
  • Green and Yellow: Earth
  • Blue: Neutral
  • Brown: Live

As the colors of the wires in the mains lead of this appliance may not correspond with the colored markings identifying the terminals in your plug, proceed as follows:

• The wire which is colored Green and Yellow must be connected to the terminal in the plug which is marked with the letter E or by the earth symbol or colored Green or Green and Yellow.

• The wire which is colored Blue must be connected to the terminal which is marked with the letter N or colored Black.

• The wire which is colored Brown must be connected to the terminal which is marked with the letter L or colored Red.

C   Using the Server Management Port

This server supports the remote control function.
When a personal computer (PC) is connected to the server management port of this server with an RS-232C cross cable, the PC can be used to control (turn on/off and reset) the server power supply.

To enable the remote control function, perform the following procedure.

- Configuring the Server Management Port
- Connecting the Server to a PC
- Configuring terminal software communication settings on the PC

C.1   Configuring the Server Management Port

Serial port 1 on the server is used as the server management port. In the BIOS Setup Utility, specify Serial port 1 as the server management port.

IMPORTANT

▶ When the server management port is specified, Serial port 2 becomes the only serial port the OS can recognize.

1   Turn on the server. Press the [F2] key during POST to start up the BIOS Setup Utility.

2   Select the [Main] menu → the [Peripheral Configuration] submenu. Set the following items.
- Set [Serial1] to [Disabled].
- Set [Serial Multiplexer] to [BMC].

3   From the [Exit] menu, select [Saving Changes & Exit] to exit the BIOS Setup Utility.

C.2   Connecting the Server to a PC

Connect the server to a PC using an RS-232C cross cable.
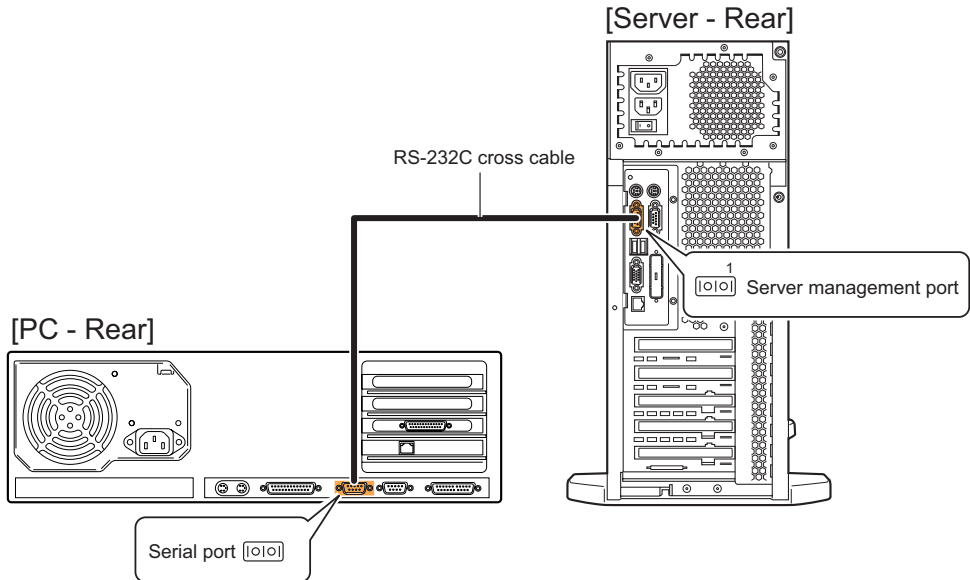
C.3   Configuring the Terminal Software (PC)

Perform the settings to enable use of the remote control function using terminal software on the PC.

■ Port Configuration

Configure the port on the PC as follows:

table: Port Settings

Item	Contents
Bits/sec.	9600
Data bit	8
Parity	Not applied
Stop bit	1
Flow control	Not applied

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Appendix

(Window example)
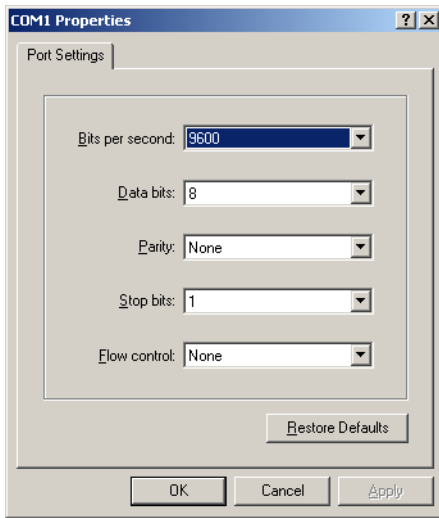
C.4   Remote Power Supply Control

The server power supply can be remote-controlled with the terminal software on the PC.
The menus to be displayed differ depending on whether the server is on or off.

■ Starting Up the Remote Controller

1   Start up the terminal software.

2   When "Login:" appears, enter "Remote" and press the [Enter] key.
Note that "Remote" is case-sensitive.

3   When "Password:" appears, enter "Remote" and press the [Enter] key.
Note that "Remote" is case-sensitive. As shown below, the characters you have entered are
displayed as asterisks.

```
Password: ******
```

POINT
> When "Main>" appears, enter "q" and press the [Enter] key. "Login:" will appear.

4   The remote control window appears.
The window to be displayed differs depending on whether the server is on or off.

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● **When the server is on**

The following window appears. The server can be reset, restarted, or turned off.

```
******************************************
Welcome to System TX200 S2
BMC FW: 0n.nn    SDRR: nn.nn
State: On (na = Currently not available)
******************************************

  REMOTE MAINTENANCE MENU
  (1) Immediate Power Down
  (2) Immediate Reset
  (3) Graceful Power Down
  (4) Power Cycle
   na Power On
  (6) View System Eventlog (SEL)
  Enter selection or (0) to quit:
```

<div align="center">table: Remote Operations Available When the Server is On</div>

Key	Menu name	Operation
[1]	Immediate Power Down	Turns the server off.
[2]	Immediate Reset	Resets the server.
[3]	Graceful Power Down	Shuts down the OS and turns the server off. Available only when ServerView is installed.
[4]	Power Cycle	Turns the server off and back on again.
[6]	View System Eventlog(SEL)	Refers to the system event log of the server.
[0]	-	Exits the remote controller.

● **When the server is off**

The following window appears. The server can be turned on.

```
*****************************************
Welcome to System TX200 S2
BMC FW: 0n.nn    SDRR: nn.nn
State: On (na = Currently not available)
*****************************************

  REMOTE MAINTENANCE MENU
   na Immediate Power Down
   na Immediate Reset
   na Graceful Power Down
   na Power Cycle
   (5) Power On
   (6) View System Eventlog (SEL)
  Enter selection or (0) to quit:
```

table: Remote Operations Available When the Server is Off

Key	Menu name	Operation
[5]	Power On	Turn the server on.
[6]	View System Eventlog(SEL)	Refers to the system event log of the server.
[0]	-	Exits the remote controller.

D Recycling

This section explains how to recycle this server.

■ Disposing of the Server

When scrapping this server, refer to "Contact Information" in "Start Guide", and contact your sales representative or maintenance engineer. This server must be disposed of as industrial waste. Furthermore, if the server is disposed of as it is, someone else may gain access to the information contained on the hard disks. It is therefore recommended that all drives be formatted before disposal. However, just formatting or deleting files may not avoid the risk that the data is restored and used for wrongful purposes. If confidential or private information is saved, in order to make it impossible to be restored, it is recommended to use third-party data wiping tools.

■ Disposing of Used-up Batteries

Used-up batteries must be disposed of as industrial waste and therefore require special processing. Let a licensed industrial waste disposal company take care of disposing them.

■ Disposing of Liquid Crystal Displays

Liquid crystal displays must be disposed of as industrial waste and therefore require special processing. Let a licensed industrial waste disposal company take care of disposing them.

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Appendix

D   Recycling

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